Fortune

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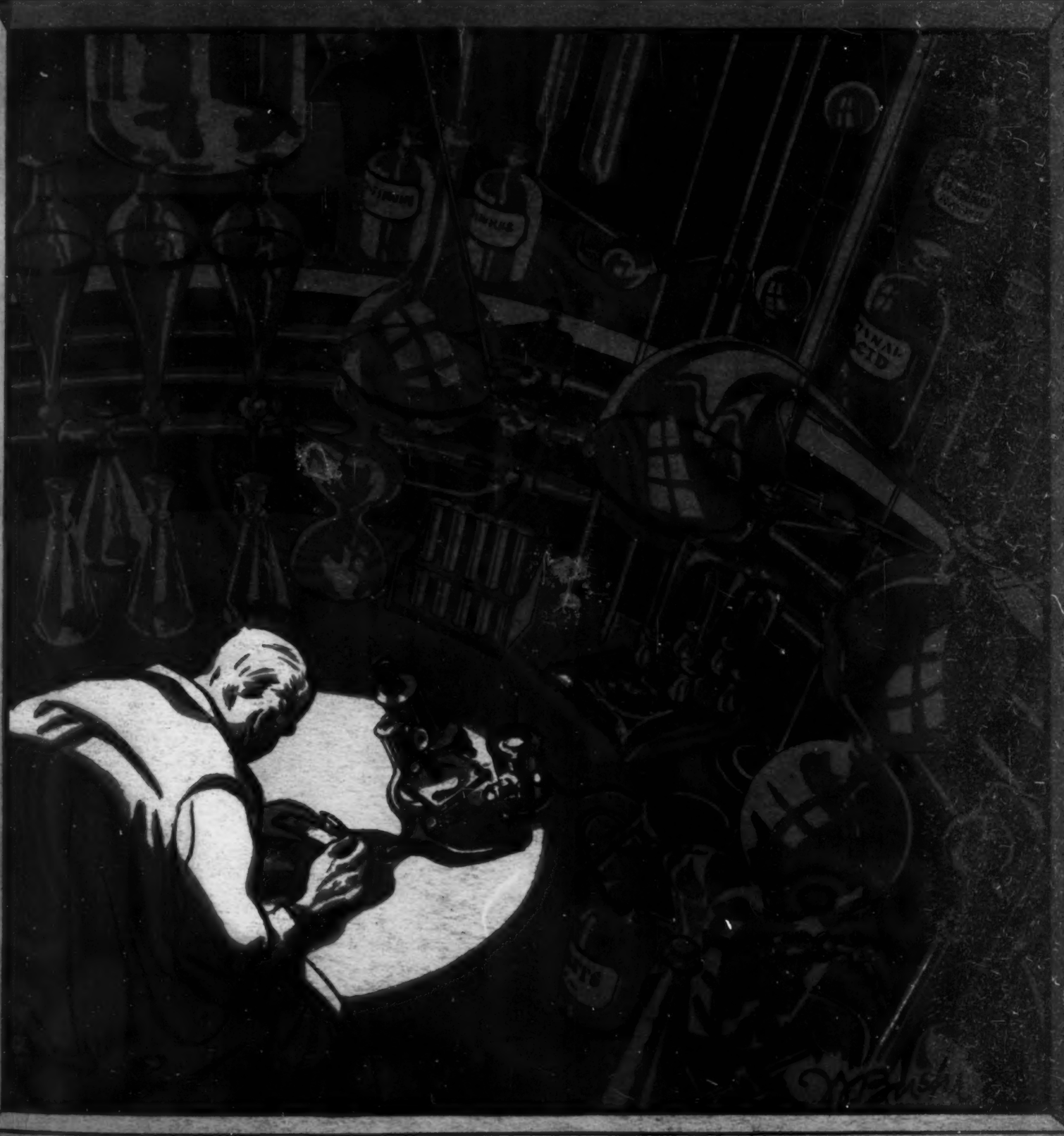
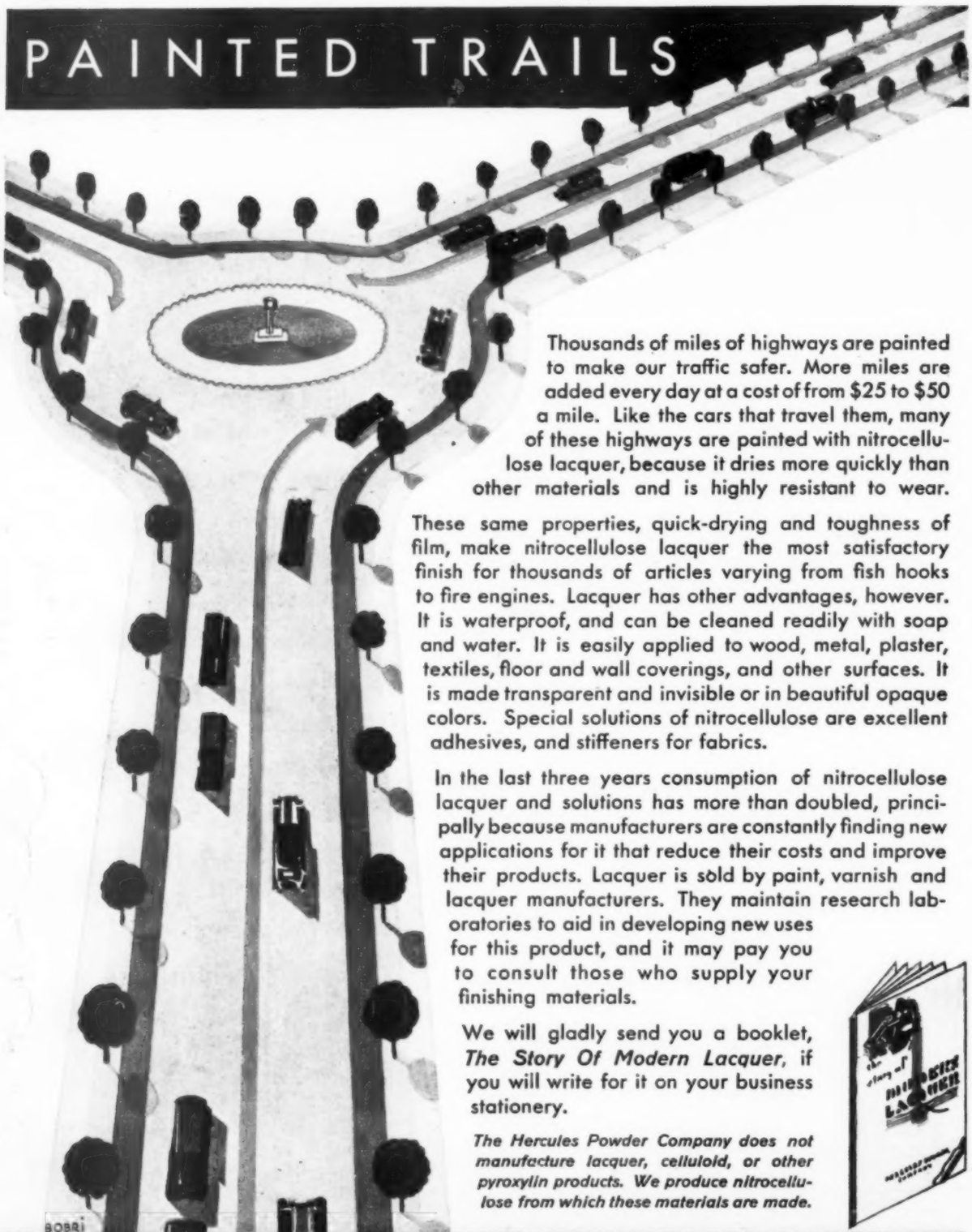


PAINTED TRAILS



Thousands of miles of highways are painted to make our traffic safer. More miles are added every day at a cost of from $25 to $50 a mile. Like the cars that travel them, many of these highways are painted with nitrocellulose lacquer, because it dries more quickly than other materials and is highly resistant to wear.

These same properties, quick-drying and toughness of film, make nitrocellulose lacquer the most satisfactory finish for thousands of articles varying from fish hooks to fire engines. Lacquer has other advantages, however. It is waterproof, and can be cleaned readily with soap and water. It is easily applied to wood, metal, plaster, textiles, floor and wall coverings, and other surfaces. It is made transparent and invisible or in beautiful opaque colors. Special solutions of nitrocellulose are excellent adhesives, and stiffeners for fabrics.

In the last three years consumption of nitrocellulose lacquer and solutions has more than doubled, principally because manufacturers are constantly finding new applications for it that reduce their costs and improve their products. Lacquer is sold by paint, varnish and lacquer manufacturers. They maintain research laboratories to aid in developing new uses for this product, and it may pay you to consult those who supply your finishing materials.

We will gladly send you a booklet, ***The Story Of Modern Lacquer***, if you will write for it on your business stationery.

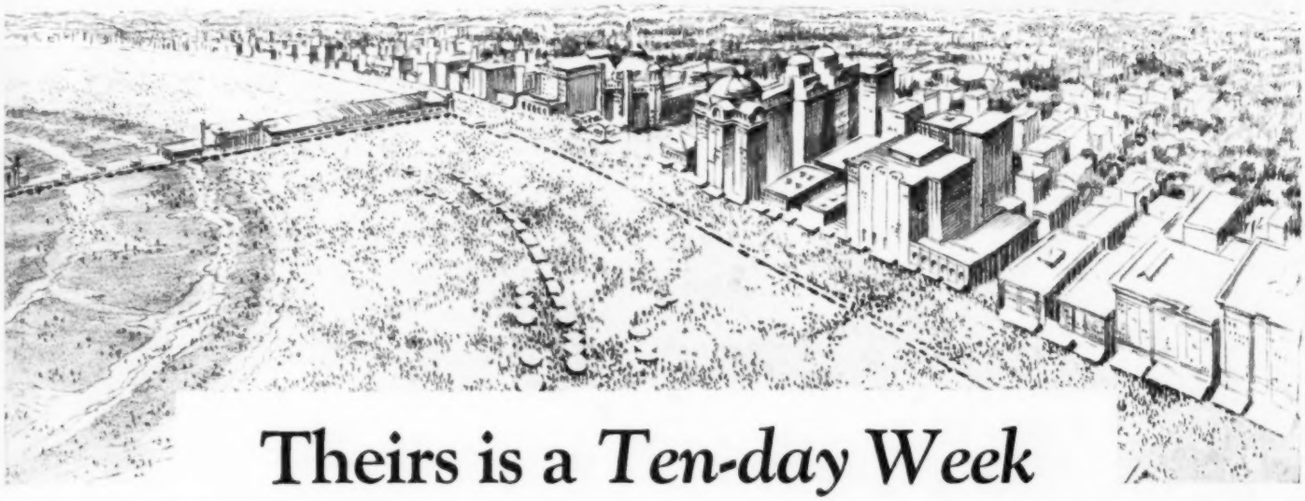
The Hercules Powder Company does not manufacture lacquer, celluloid, or other pyroxylin products. We produce nitrocellulose from which these materials are made.

CELLULOSE PRODUCTS DEPARTMENT

HERCULES POWDER COMPANY (INCORPORATED)

986 KING STREET, WILMINGTON, DELAWARE

NITROCELLULOSE :: COTTON CELLULOSE :: NAVAL STORES :: EXPLOSIVES



Theirs is a *Ten-day Week*

THE five-day week may be the thing for labor, but what most executives need today is a ten-day week. A conference in Toronto, an appointment in Wheeling, W. Va., the weekly meeting of the factory committee in Evansville, Ind., a three-day trade convention at Atlantic City. Now it can be done, easily, comfortably, in one week—the new Travel Air ten-day week for major executives.

* * * *

An increasing number of progressive concerns are using the six-passenger Travel Air cabin plane to transport their directors and executive officers on missions of importance. Swiftly and safely, Travel Air carries them cross country with a minimum of time out for travel. Powered with a 300 h. p. Wright Whirlwind engine, this luxuriously furnished monoplane has a cruising speed of 110 m. p. h., a range of 430 miles. Another model, powered with a 420 h. p. engine, flies even faster and farther.

* * * *

No matter where their business may take them, owners of Travel Air planes have the great advantage of never being far from the service facilities of Travel Air distributors and Curtiss-Wright airports. Over forty of these landing fields are strategically located throughout the country.

* * * *

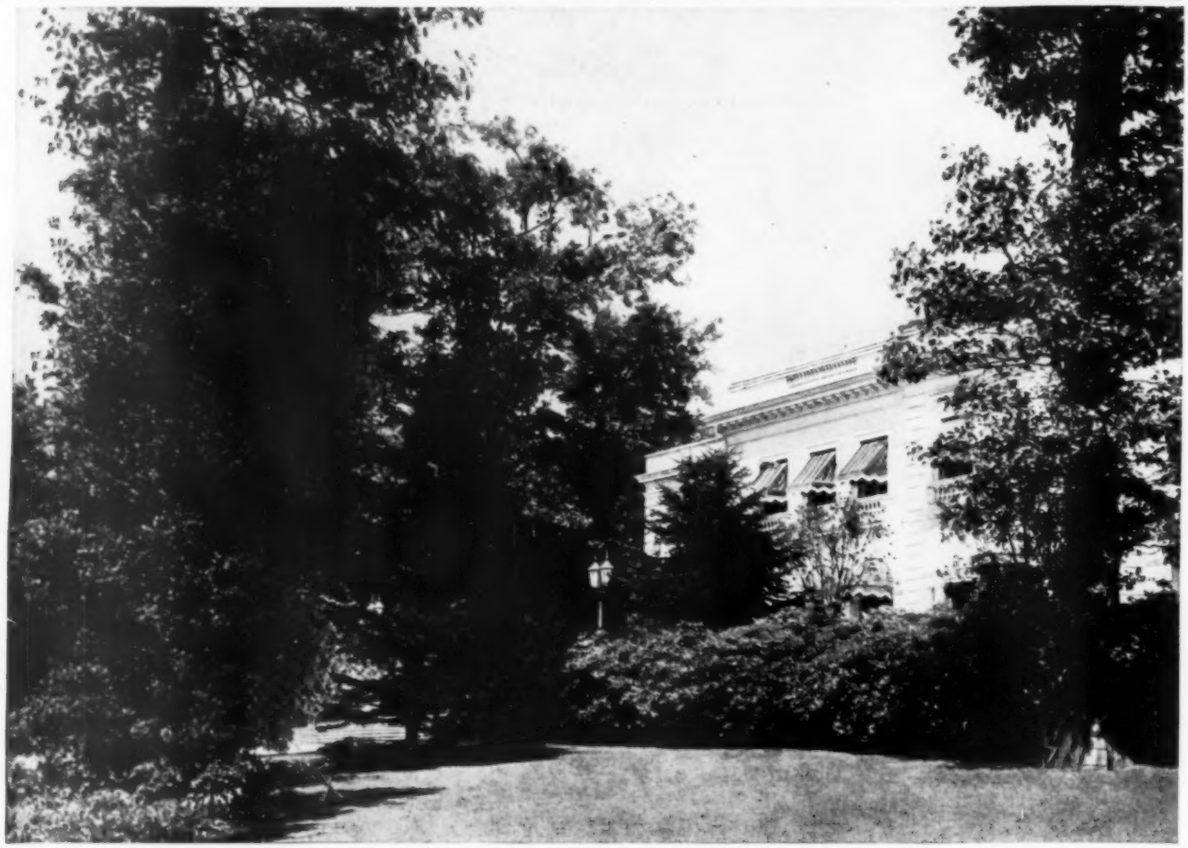
Cost of operation. Tabulations of the cost of operating business planes, based on actual experience of prominent firms, will be supplied to interested executives. For these, and for full information regarding the performance of Travel Air planes, write department T-1.

TRAVEL AIR COMPANY
Division of CURTISS-WRIGHT
27 WEST 57TH STREET, NEW YORK

A PLANE FOR EVERY PURPOSE — TRAVEL AIR

1880 GOLDEN ANNIVERSARY YEAR 1930

DAVEY TREE SURGERY



Reproduction from a color photograph made on the estate of Walter P. Chrysler, Great Neck, Long Island, New York, by Wilfred O. Floing

© The D. T. E. Co., Inc., 1930

1,000 high-type scientifically trained experts serve Davey clients

JOHN DAVEY struggled through the first 21 years with only a few helpers in the practice of his new science of tree surgery. Then in 1901 he published his first book, "The Tree Doctor," illustrated largely with photographs made by his own hands.

From this point on, there was a gradual growth against difficult odds in the development of the human organization that was to carry on his work. Aside from the ordinary problems of developing a new business, there was the unusual task of pioneering a new idea.

JOHN DAVEY
1846-1923
Father of Tree Surgery
Reg. U. S. Pat. Office

Gradually his organization grew to the point where his trained men must operate beyond his personal supervision. A resident school was necessary to give scientific training. And in the fall of 1908 there was established the Davey Institute of Tree Surgery, which remains to this day the only school of its kind in the world.

There are now 1,000 Davey Tree Surgeons carefully selected, trained scientifically. The entire organization includes some 1,300 people and did a business in 1929 of $3,250,000, serving 22,368 clients from Boston to beyond Kansas City, and between Quebec and the Gulf.

Send for nearest Davey representative to examine your priceless trees without obligation. Any necessary work will be done at reasonable cost. Davey service is local to you —Davey Tree Surgeons live and work in your vicinity. Write or wire Kent, Ohio, or telephone nearest branch office.

Tune in Davey Tree Golden Anniversary Radio Hour
Every Sunday afternoon, 5 to 6 Eastern time; 4 to 5 Central time; over the Red Network National Broadcasting Company. Featuring the old-time songs that everyone knows and loves. Listen to Chandler Goldthwaite on the Skinner Residence Organ.

THE DAVEY TREE EXPERT CO., Inc., 402 City Bank Bldg., Kent, Ohio

MARTIN L. DAVEY, *President and General Manager*

Branch offices with telephone connections: Boston, Springfield, Pittsfield, Providence, Hartford, Stamford, Westport, Conn., New York City, White Plains, Patchogue, L. I., Hempstead, L. I., Albany, Syracuse, Rochester, Buffalo, Toronto, Montreal, Orange, N. J., Ridgewood, N. J., Philadelphia, Addingham, Pa., Germantown, Pa., Baltimore, Washington, Pittsburgh, Cleveland, Toledo, Columbus, Dayton, Cincinnati, Indianapolis, Louisville, Paducah, Ky., Detroit, Grand Rapids, Chicago, Oconomowoc, Wis., Minneapolis, Des Moines, St. Louis, Kansas City, Mo., Tulsa, Okla., New Orleans, Memphis, Nashville, Atlanta, Charlotte, N. C.

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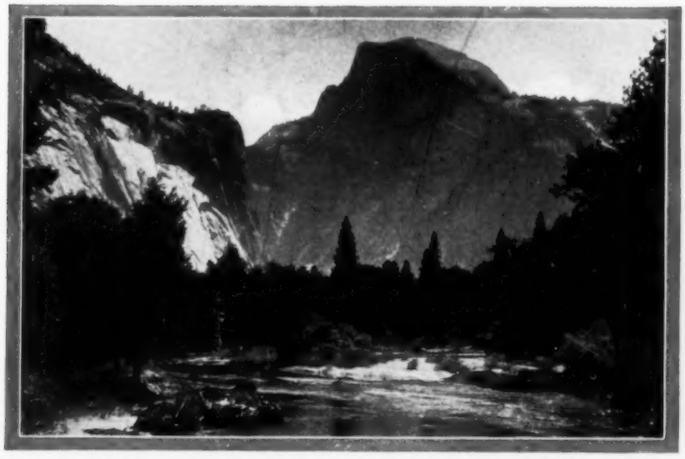
Summer in the California that's centered by San Francisco —

Where thousands came once to visit and returned again to live as they had only dreamed of playing—there surely you'll enjoy this summer.



HALFDOME — IN YOSEMITE NATIONAL PARK

California. One day's lure is high-hilled San Francisco—the next your choice of half a hundred other places,

YACHTING ON SAN FRANCISCO BAY

down beside the sea or thrust by mountains into philosophic skies.

California calls you to a freedom of the body and the mind . . . to a new luxury in rest, a new zest in play. Calls you from the high Sierra with its famous inns—Feather River Lodge, Tahoe Tavern, Awahnee Lodge at great Yosemite; and from mountain lakes and streams, and Redwood forests; debonair Del Monte—Pebble Beach, where golf is played above a yacht-flecked ocean; and from San Francisco, with its secret of buoyant joyous living.

San Francisco, America's coolest summer city. Right in the center of this great vacationland and part of it. A worldly cosmopolitan part.

Here is headquarters city for the business of the whole Pacific Coast. Its fabled hills look down upon the towers industry has raised, and the bay within the Golden Gate where all the ships of the world could find shelter at one time.

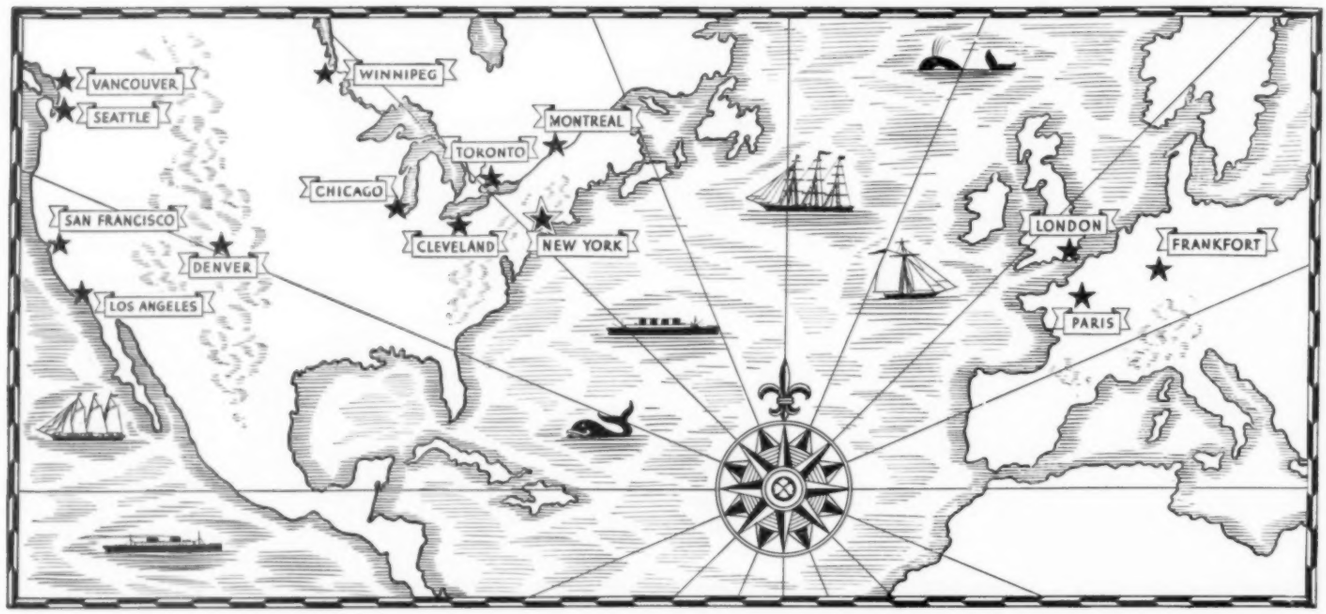
Beyond, in each direction, much closer than you'd think, you'll find this California's farms and orchards, mines and forests that are its backbone and its strength. You'll see the clean, bright towns and the streams of motors on the roads that speak its wealth. You'll see its brilliant future, one perhaps you'll want to make your own.

For books of pictures and other information write Californians Inc., Dept. 2206, 703 Market St., San Francisco.

THE WALL STREET OF THE WEST

SAN FRANCISCO
IN CALIFORNIA—"WHERE LIFE IS BETTER"

jumping the world's fences



American sales enterprise is hurdling national boundaries and making the whole world its market. It is part of the freer and ever-widening commerce between nations. Long alert to this trend, the McCann Company is continuously studying foreign markets, and has provided facilities for placing advertising in every section of the world. Already we have established complete service organizations of our own at fourteen important marketing centers in the United States, Canada and Europe. Important to every export manager is the American standard of service offered by our European offices. Associated with each office are native advertising men, long experienced in local problems. But the direction is American, and American ideas and methods have as full play as conditions warrant. Each office is equipped to give complete agency service, just as that is understood in the United States—a service characterized by that dispatch, thoroughness and resourcefulness made possible by our far-reaching, yet closely-knit organization.

If you are interested to find in Europe an on-the-spot marketing organization ready to study the sales possibilities of any product, send for the European Service booklet. Foreign Dept., 285 Madison Ave., N.Y.

THE H·K·McCann COMPANY

INTERNATIONAL ADVERTISING SERVICE

NEW YORK · CHICAGO · CLEVELAND · SAN FRANCISCO · LOS ANGELES · SEATTLE · DENVER
MONTREAL · TORONTO · VANCOUVER · WINNIPEG · LONDON · PARIS · FRANKFORT o. M.

STAMINA

TIRES must have stamina today as never before. Cars are faster and more powerful. Wheels are smaller. Roads are better. Distance is measured in minutes instead of miles. All this subjects tires to greater wear, harder strains, and the faster a car travels the more essential is the need for tires that are dependable and safe. The answer is the new Supreme Balloon, the strongest, toughest, safest tire ever built. Gum-Dipped cord construction, extra rubber between the plies, a broader, thicker safety tread. And new beauty to enhance the finest cars.

Any Firestone Dealer can equip your cars now.

Firestone

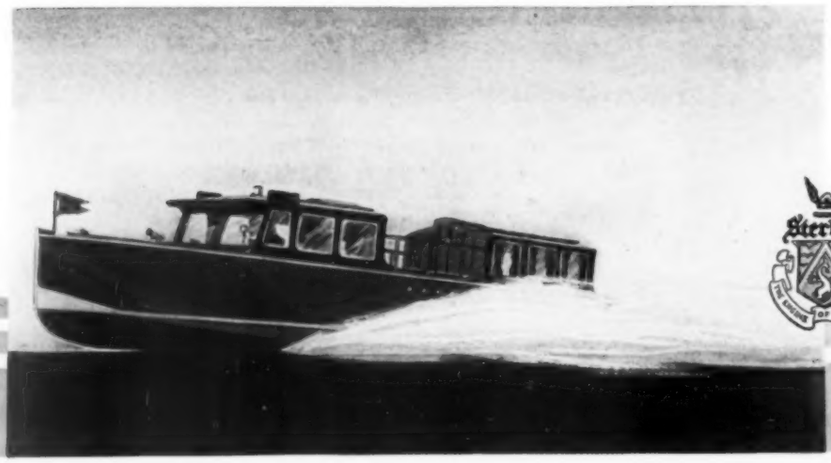
Supreme Balloon

MOTOR BOATING...the luxury of sport

Whether you view a speeding cruiser from a yacht club dock, or enjoy the exhilaration of gliding, mile after mile, enroute to another anchorage, you can well appreciate that this is traveling with greatest luxury and freedom. Eyes, accustomed to close buildings and shadowy vistas, expand naturally and gaze restfully on blue skies and green-blue water. Each mile of bubbling wake unreels the thread of care you leave behind you.

• 12 to 565 HORSE POWER •

STERLING ENGINE COMPANY BUFFALO, N.Y., U.S.A.



40-foot, 32-mile Hydroplane built by Ditchburn

Powered with Two 150 H. P. Sterling Petrel Engines

Sterling

LAUGH THIS OFF— IN A BOAT

It's going to be hot on shore . . . and dusty . . . highways more crowded. Detour signs coming out of winter storage. Rural constables tuning up their motorcycles. Two traffic signals blooming where one was damned but yesteryear.

But on the water — there's freedom — sweet cool breezes — a trackless world of romance and adventure. It's yours — all yours — if you have a boat. A bitter mocker if you haven't.

And if you would enjoy it to the utmost, choose your boat with care. Make certain that you can be proud of the boat you buy, that it will be the envy of all beholders.

We suggest a Gar Wood Boat, for there can be no finer runabout than those created by the Miss America craftsmen, and no other can have such a tradition. You will find among the fourteen new models, just the boat that suits your individual taste and needs. Open, enclosed or convertible, 22 to 33 feet, 30 miles per hour to 55, $2,250 to $12,950, all Gar Wood Boats are built to the same standards of excellence. Famous for their "soft-riding", you will find them equally outstanding in seaworthiness.

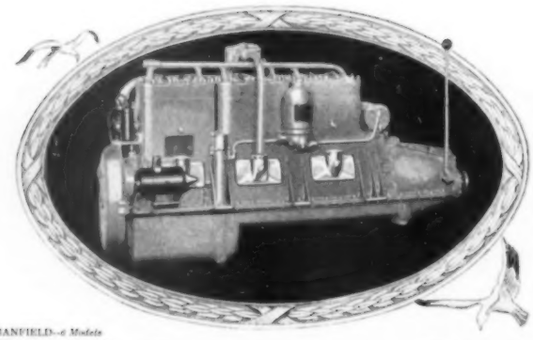
You will want that boat mighty soon now. So you may not be disappointed on delivery, we suggest you see the nearest Gar Wood dealer right away or wire us for information.

GAR WOOD INC.

THE GREATEST NAME IN MOTORBOATING

206 River Road Marysville, Michigan

Showroom and Factory Branch, 1868 Broadway, New York City



BANFIELD—*6 Models*
CHRIS-CRAFT—*6 Models*
CORSAIR "36"
GAR WOOD "40"
HACKERCRAFT*
KING SEA-SKIFFS
KYLE "45"
MATTHEWS*
MINETT-SHIELDS
NORTH STAR
ROBINSON SEA GULL
Twin Installations
SEA LYON "40"*
STEPHENS
WHEELER "PLAYMATES"*
Foreign
BRITISH POWER BOATS
OSBORNE-CRAFT—*Finland*
CLAUS CRAFT—*Germany*
CHANTIERS NAVAL EXCELSIOR
DESPUJOLS—*France*
*Optional

DEPENDABLE POWER

The wide acceptance of SCRIPPS motors by so many prominent builders of standardized craft who offer them as standard or optional equipment is significant of SCRIPPS unfailing dependability.

Fifteen models—13 to 200 Horse Power
High speed and medium duty.

Interesting literature will be mailed upon request.

SCRIPPS MOTOR CO., 5844 LINCOLN AVENUE, DETROIT, MICH.

SCRIPPS

• THE MOTOR THAT CROSSED THE ATLANTIC •

Low Priced DeLuxe Cruisers!

THE Single Cabin, Double Cabin and Day Cruisabouts, 29 feet long, are low priced, deluxe cruisers that will take you over the water at speeds up to twenty-four miles an hour. These Cruisabouts have plenty of deck space for carrying large parties without crowding and complete cabin arrangements including toilet room, a complete galley where real meals can be prepared and served, and large, comfortable berths for four or six people.

At $3585 for the Single Cabin; $3685 for the Day model and $4185 for the Double Cabin Cruisabout, these cruisers far surpass all others of equal size, type or quality. Booklet "N" illustrating and describing these jaunty Cruisabouts mailed free on request. Cruisabouts can be inspected at Bruns, Kimball & Co., Fifth Ave. and Fifteenth St., New York City.

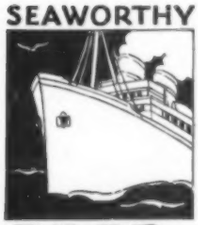
RICHARDSON BOAT COMPANY, Inc.
455 Sweeney Street North Tonawanda, N.Y.

Richardson Cruisabouts

Hackercraft

Still Unbeatable and... Keener than Ever to Drive

SEAWORTHY



Hackercraft are hand-built. "Skimping" in materials and workmanship is never practiced in the Hacker Shops to achieve lower prices. Price-cutting sins against quality—and quality is paramount in the boat you buy. Double planked genuine Honduras mahogany bottoms, copper riveted (not screw fastened) give unexcelled durability and greater speeds. Hand finished hulls, genuine (not imitation) leather upholstering with every appointment in keeping with their supreme quality provide you a permanent beauty that remains undimmed by time or rival boats. May we send you our catalog illustrated throughout with actual photographs of Hackercraft in action?

HACKER BOAT COMPANY
548 River Drive Mt. Clemens, Mich.

HACKERCRAFT
AMERICA'S FASTEST SPEED BOATS

CUSTOM BUILT

for Discriminating Yachtsmen

Only One Quality!

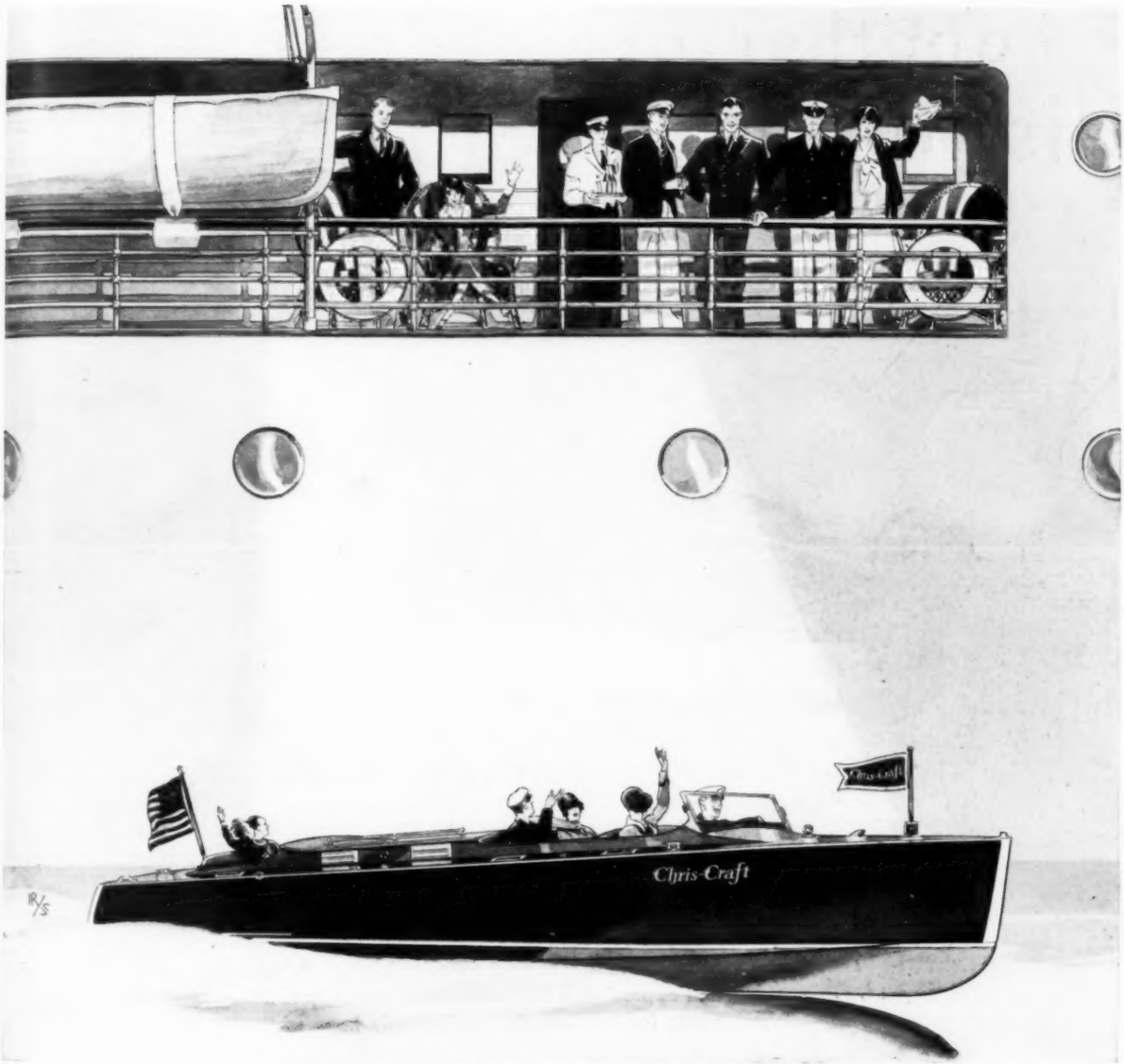
For three generations yachtsmen of extraordinary taste and judgment have had their yachts built in the ship building yard of M. M. Davis and Son. Have received a most exceptional degree of quality and craftsmanship—a most fair treatment in price. Many have had their second, third and even fourth yachts built here.

Write for list of power and sail yachts we have built.

Masterpiece of the Sea

Every yacht built by M. M. Davis and Son is truly a masterpiece of the sea, the work of artist craftsmen, a creation of beauty, grace and seaworthiness.

M. M. DAVIS & SON
For Three Generations
CUSTOM BUILDERS
of fine Sail and Power Yachts
Solomons Maryland



Chris-Craft 26-ft. Runabout, 250 H. P Chris-Craft Marine Motor, speed up to 45 M. P. H., $4750

ROUGHING it has gone out of fashion. Chris-Craft will take you in arm chair comfort at express train speed right into the heart of nature. Enjoyment of the wilderness is no longer confined to those who can carry a pack over rough trails or row a hard seated boat. Even an invalid can go fishing. Seated upon deep, luxurious cushions one may fish or ride by the hour without fatigue. ' ' ' One may explore a hundred miles of coast-line—go swimming—attend an afternoon tea and be ready for the dinner dance—all in the space of an afternoon—and best of all, without fatigue or discomfort. ' ' ' Better to have a Chris-Craft without a summer home than a summer home without a Chris-Craft. All the family will gain health and pleasure from Chris-Crafting, for it provides always something to do and the means to do it with. From nimble seventeen-footer to the luxurious Chris-Craft yacht is a wide range of fine watercraft to suit all needs and tastes. Illustrated catalog may be had from Chris Smith & Sons Boat Co., 126 Detroit Road, Algonac, Michigan.

NEW!
A 17-foot Runabout, 25 M. P. H. priced at $1295.

Chris-Craft

World's Largest Builders of Mahogany Motor Boats

Runabouts—Sedans—Commuters—Cruisers—Yachts
25 Models—17 to 48 feet—$1295 to $55,000

A FEW DESIRABLE SALES TERRITORIES OPEN. WIRE FOR DETAILS.

★ ★ another achievement ★ ★
distinctively SPARTAN

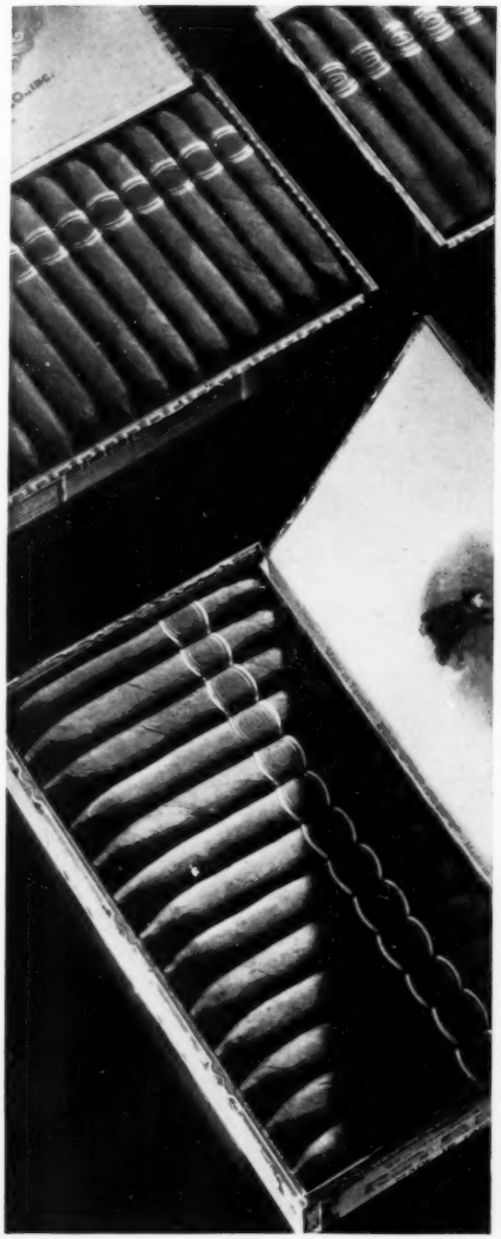
WHEN you see the new Spartan C-4-225 you will be impressed with its many refinements of design. This new de luxe cabin monoplane perpetuates the Spartan tradition of constant progress .... and sets it apart as another achievement distinctively Spartan.

» Spartan offers the C-4-225 with but one regret .... that its finer details of craftsmanship are not entirely visible. Its trim, clean lines may be seen and appreciated. Its interior arrangement and the comfort of its appointments for four are factors instantly impressive. But its durable, lasting construction, its stability under any condition of flight, its advantages in safety .... these are qualities fully apparent only when it is called upon repeatedly for extremes of service.

» Spartan Aircraft Company expresses its sincere belief that no cabin airplane today contains more value, dollar for dollar, than the C-4-225. A new booklet showing all Spartan models in natural colors will impress you. A demonstration by a factory representative, which may be arranged without obligation, will convince you. Write today for full information and prices.

The Spartan C-4-225 is powered by the Wright "Whirlwind Seven." Standard equipment includes dual controls, metal propeller, booster magneto, starter, complete instrument panel, oleo gear, Bendix wheels and brakes, adjustable stabilizer, navigation lights. Interior design by Kinnan . . . fittings by Ternstedt . . . broadcloth by Wiese.

SPARTAN AIRCRAFT COMPANY
TULSA, OKLAHOMA
★ ★ ★



If it lifts Cigar Production into the Billions

What might Manufactured Weather do for you?

MACHINE-MADE cigars were virtually an impossibility when weather varied inside the factory.

The machine rolls a perfect cigar. But it makes no distinction about the condition of the leaf. The hand worker can feel when the leaf is ready to roll. The machine simply takes the wrappers as they come. Naturally every wrapper must be in exactly the right condition for rolling.

Now tobacco is extremely sensitive to weather. Let there be too much moisture in the air, and tobacco soaks it up . . . even becomes moldy. If there is not enough, the leaf loses moisture . . . gets dry . . . brittle . . . breaks into scrap in handling. Think what the finished cigar would be were such variations allowed to exist. One smoke dry and acrid . . . the next too damp to draw.

Marvelous as the modern cigar-making machine is, it would fail to give the branded cigar its greatest virtue, uniformity and the certainty of a cool, sweet smoke each time—unless Manufactured Weather came to its aid.

Today Blackstones, Bayuk Philadelphias, La Palinas, and dozens of other famous cigars are made in a ceaseless stream . . . each one fresh and perfect. Their total production runs into *billions* . . . thanks to Manufactured Weather. Other billions of cigarettes—Camels, Lucky Strikes, Old Golds, Chesterfields—are better because they are made in this conditioned air.

Manufactured Weather is the name given exclusively to the air conditioning systems of Willis H. Carrier and his associates. It is paying its way today in more than two hundred *types* of industries . . . in more than 3,000 installations.

Unsuitable indoor weather may affect your sales or hinder the speed and continuity of production in your business. Or it may vitally influence your own health, comfort and productive efforts and those of your employees. Let us furnish you with the full story of what Manufactured Weather has done in your business field. We suggest that you get in touch with our Newark Offices at once.

ONE MACHINE—THREE GIRLS *roll four to five thousand perfect cigars a day with Manufactured Weather in the Blackstone factory.*

Manufactured Weather's Directory in the Tobacco Industry

American Cigar Company
American Tobacco Company
Bayuk Cigars, Inc.
Benson & Hedges
British-American Tobacco Company
Congress Cigar Company
Consolidated Cigar Corp.
De Nobili Cigar Company
Otto Eisenlohr & Brothers, Inc.
General Cigar Company, Inc.
Heber Process Corporation
Industrial Company (Porto Rico)
Julius Klorfein
Liggett & Myers Tobacco Company
P. Lorillard Company
Mazer-Cressman Cigar Company, Inc.
New York & Porto Rican Steamship Company
Porto Rican-American Tobacco Company
E. Regensburg Company
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Standard Cigar Corporation
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NEWARK, NEW JERSEY

OFFICES: NEW YORK, PHILADELPHIA, BOSTON, CHICAGO, CLEVELAND, WASHINGTON
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Manufactured Weather *makes* "Every day a *good* day"

CARRIER ENGINEERING CO., LTD.
LONDON, PARIS, BOMBAY, CALCUTTA, JOHANNESBURG

CARRIER LUFTTECHNISCHE GESELLSCHAFT
STUTTGART-BERLIN

Off the Record

Roche of the Coal Mines

THE practical employer's answer to the impractical reformer's suggestions used to be: "Come out here and run my business for me if you know so much about it." It never was said very seriously. But nowadays, out in Colorado, they don't say it at all. They think about Miss Josephine Roche and the Rocky Mountain Fuel Company and the Colorado State Industrial Commission and the United Mine Workers of America and the price of coal, and they say nothing. There is very little to say, and most of that Miss Roche has said already.

Miss Roche was a Vassar girl and a social worker. Miss Roche's father was a director of the Rocky Mountain Fuel Company, dominating the northern coal fields of the state. And Colorado was the scene of industrial warfare culminating in the "Ludlow Massacre," the destruction of the labor unions, and the complete domination of the industry by the employers and by the State Industrial Commission, acting in their interest. Miss Roche went her way from juvenile court work in Denver, to Public Educational Association work in New York, to a policewoman's job in Denver, to the organization of Colorado for the Progressives, to Belgian relief work in England and New York, to educational and child welfare and juvenile court positions in Washington and New York and Denver. Colorado went its way through Federal investigations of the coal industry and accumulated bad will to more bad will and more Federal investigations of the coal industry. And Miss Roche's father, after a lifetime of affection for his daughter and lack of sympathy, to put it no more forcefully, for her views, died. With the result that in 1927, on the eve of the so-called I.W.W. strike, Miss Roche became the owner of a controlling interest in the company and directly concerned in its management.

It was a situation to appeal to the somewhat soured risibilities of every miner and mining executive from the union-busting, Rockefeller-controlled C. F. & I. down in Pueblo to the last engine house and tipple of the northern field. Here was the mine-owner's daughter with the advanced ideas actually taking over her father's mine with the big winds already blowing and hell about to bust. They expected her to inaugurate a fool's millennium with a manifesto and then climb down. Or they expected her to become a realist now that the thing was real and change her tune. What she actually did was to sit tight and wait and watch. She watched while the strike broke and guns went off at her mine, the Columbine, and she watched while the strike petered out and the half-starved miners accepted a beggar's sop and everything returned to the *status quo ante*. There was a good deal to see. There were some tens of thousands of dollars worth of machine guns, ammunition, barbed wire, and detectives piled up around her own mines. There were the State Industrial Commission and the people in Pueblo and the miners. And there was the industry itself. But hardly was the strike over when she began to act.

The Commission could tell her what minimum wage she was obliged to pay, but not what maximum she might permit herself. She therefore established her own scale. She paid her men $7.00 a day, with one exception the highest wage in the United States since the abandonment of the so-called Jacksonville scale of wages. She recognized independent trade unions. She provided a mechanism for arbitration of disputes. She established a Department of Medicine and Health. She provided for better working conditions. And she incorporated all these matters into a contract with her employees. The result was, of course, a roar from the industry. Miss Roche was preparing bankruptcy for herself and disaster for everyone. The United Mine Workers of America would return to unionize the mines. (They have returned.) All the battles and victories of a generation would go for nothing. And who would gain?

First of all, the miners. Miss Roche's men are satisfied with their wages and their working conditions and are attempting to counteract the seasonal nature of their occupation by farming on lands provided them by the company.

Secondly, the Rocky Mountain Fuel Company. In the first six months of the new plan, production and sales had increased 16 per cent, efficiency 19 per cent, and costs, even with, and including, the higher wages, had decreased. With the loyal coöperation, instead of the sullen hostility, of its employees, the company mined 1-and-2/100ths tons per man per day more than it had mined six months before.

And finally Miss Roche. At the age of forty her attractive face and firm chin, her gray eyes and her black hair are pretty well known in the state of Colorado. She seems to signify. People believe in her. And she has, in the best possible surroundings, an almost unheard-of chance to put her social convictions into practice and measure the result.

The competing companies have not gained. Several operators went bankrupt two years ago trying to buck Miss Roche's low-priced coal mined by high-priced miners. It was a queer thing.

Mott of Motors

IF THE twenty-two vice presidents of General Motors were ranked in order of what advertisers call attention-value, the last would not be Charles Stewart Mott. Tall, handsomely set up, with white hair and mustaches and a healthy complexion, he was termed by his third wife "the most distinguished and eligible man in Detroit," and this, too, when she was suing him for divorce. He is a soldier who had served in two wars, an ardent dancer, a manufacturer who has built up his business (automobile hubs, rims, axles) from $100,000 in 1900 to $3,000,000 in 1913, and a politician who has been thrice mayor of Flint, Michigan. His associates are at a loss whether to call him parsimonious or prodigal in money matters. In small things, he is certainly not lavish. At one time he corresponded long and earnestly with Vice President Swayne on the subject of paper clips, their use and waste. During the deflation of 1921, he prowled about the General Motors offices turning off superfluous electric lights. When he was in Paris with his third wife, they had two scenes at every dinner party: one when Mr. Mott undertipped and the other when Mrs. Mott, compensatively, overtipped. And yet when employees of the Union Industrial Bank of Flint lost most of the bank's money in the 1929 market collapse, Mr. Mott put in $3,500,000 of his personal fortune and saved the bank.

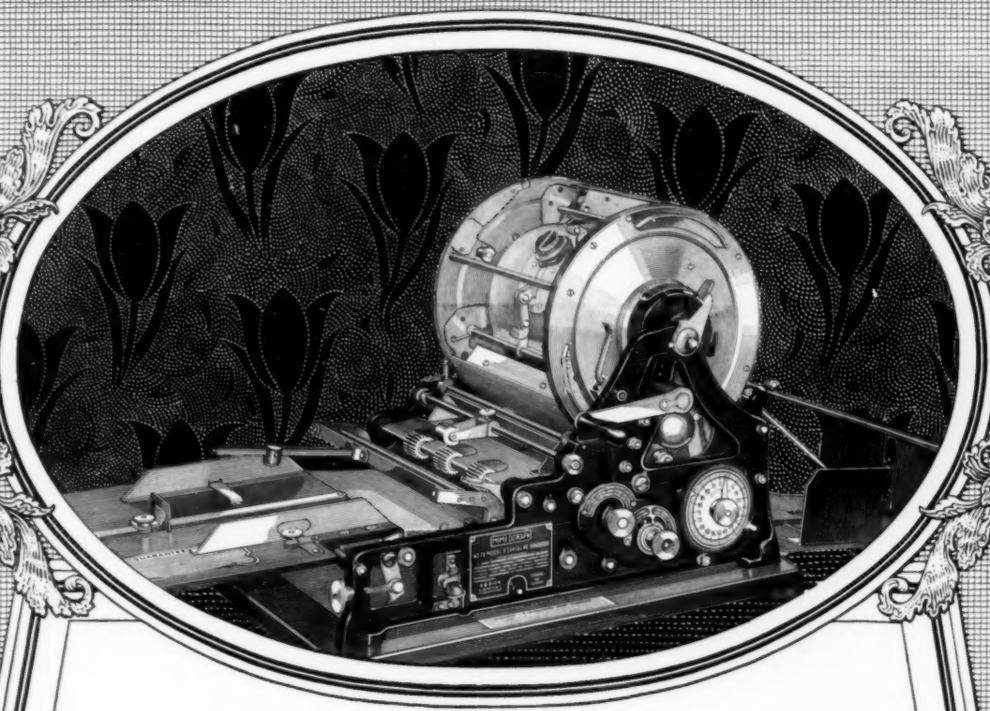
There is good reason to believe that Mr. Mott could save his home town bank many times over. When he sold his thriving business to General Motors, hub, rim, and axle, he took not a cent from the G. M. treasury. He did take, however, a good-sized block of G. M. stock. With steady confidence in the future of General Motors, he has held on to his shares through fair and foul, seen them multiply fiftyfold. It is said that Mr. Mott now owns a staggering block of Motors shares, estimates ranging from 1,000,000 to 3,000,000, that he is furthermore a very large stockholder in such sound companies as U. S. Steel and Union Carbide, and that he is, in a quiet way, one of the wealthiest men in the country.

Bus out of Ford

ONE of the things that Gladys, the twenty-one-passenger NiteCoach of the Pickwick Stages System, does not resemble is an old model Ford. Gladys is about fifty feet under all, ten feet from road to roof, double-decked, beetle-backed, stoat-nosed, and smooth as an olive. She is equipped with a removable motor (twenty minutes), twenty-one berths, a kitchen, and the ordinary accessories of Pullman travel. She carries food, drink, sheets, blankets, china, glasses, mattresses, and a crew of three. And she covers a great deal of ground very sweetly and quietly and regularly. She and Alsacia and Corinne and Morpheus and Gypsy run from coast to coast and from Canada to Laredo—with connections for Victoria and eventually for Mexico City and Acapulco. And at no point in her run does she remotely suggest the still familiar outlines of Model T.

Neither, to be honest, do the Pickwick Terminal Hotels with Fully Equipped Repair, Fuel, and Service Stations attached, which stand at the stages of the Pickwick runs. Nor the handsome and expensive Pickwick planes which run on a 2,800-mile line from Los Angeles to Mexico City, Guatemala City, and San Salvador. Nor even the humble parlor buffet cars with real

[*Continued on page 16*]



ELIMINATING THE SEASONS

Yesterday business deliberately encouraged seasonal activity. The result was spasmodic effort, periods of rush and over-stress, between periods of lull and no profit. Today business rides on an evener keel. It no longer dares to wait the seasons. In the steady, all-year-round driving, which has brought the new epoch of permanent prosperity, the Mimeograph has played a strenuous and important part. Aggressive! Sales-letters, follow-ups, charts, sketches, office communications, price-lists, stock quotations, anything that can be written, typewritten or sketched in line, the Mimeograph duplicates accurately, thousands in every hour. It helps in business-getting. Also it aids in marshalling the organization to the job. Let us tell you about this master duplicator, that needs no experienced operator and assures privacy. Address A. B. Dick Company, Chicago, or 'phone branch in any principal city.

MIMEOGRAPH

EDISON-DICK
MIMEOGRAPH
CHICAGO

SQUARE blade-ends

Easier and safer to handle

MOST MEN like fishing—but not fishing down the drain-pipe for a slippery razor blade. That's one of many reasons why a vast army of men are praising the New Gillette Blade. Its square ends can't slip out of soapy fingers: and how easily the new blade reaches into the tight little corners around the mouth, nose and ears!

There are so many other big improvements that you won't appreciate them all until you try this New Gillette Shave yourself. Here are just a few: no more wiping or drying of parts. New blade resists rust. "Razor pull" is banished forever by new reinforced corners of razor cap and cut-out corners of blade.

Sounds almost impossible to give you all this remarkable new shaving comfort for only one dollar, doesn't it? Yet your dealer has your New Gillette Razor set waiting for you—your choice, in fact, of five styles of handsome cases. Additional new blades are priced at one dollar for ten and fifty cents for five.

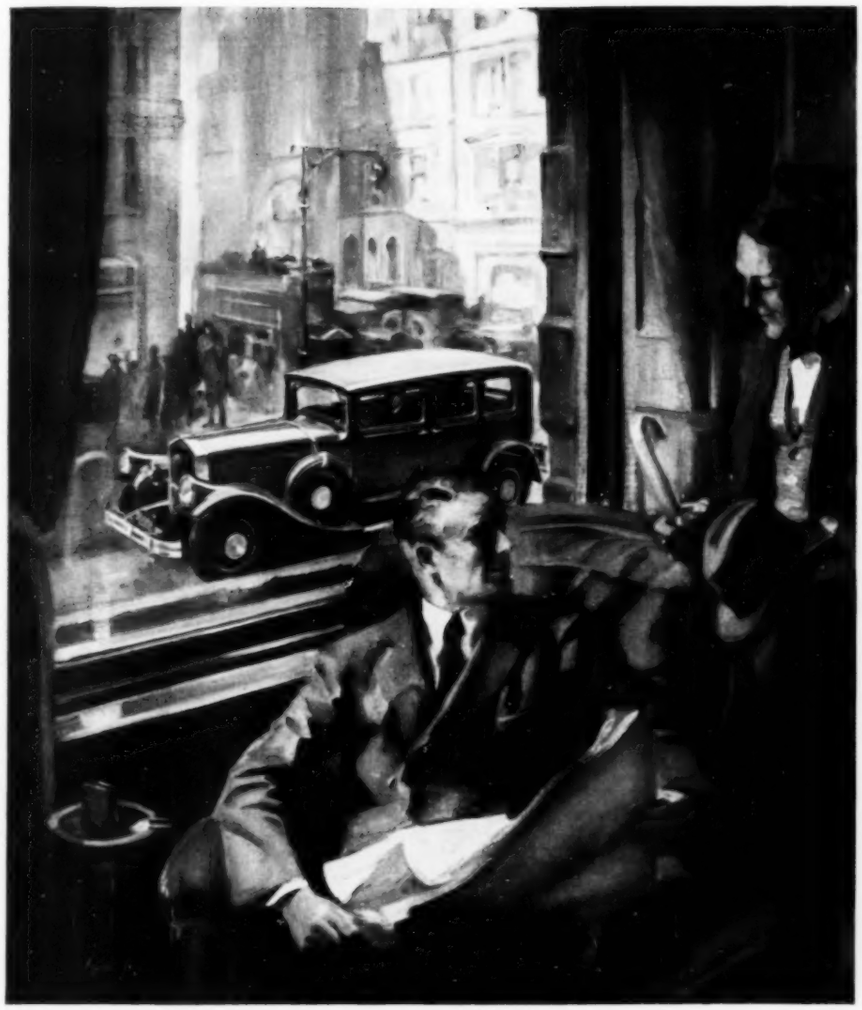
Enjoy this new shaving thrill tomorrow morning by seeing your dealer on your way home tonight.

GILLETTE SAFETY RAZOR CO., BOSTON, U. S. A.

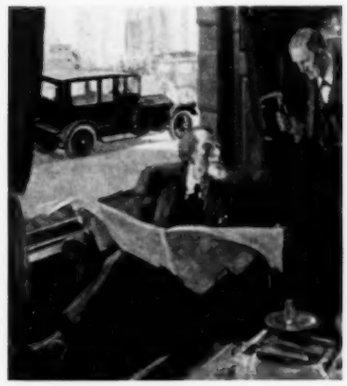
$1.00 *for ten; 50c for five.*
The New Gillette Blades in the new green packet

TRADE Gillette MARK

The New Gillette Shave



That fine things are fairly unchanging, is the story told by these two pictures of an identical scene. Both portray New York's smartest club, its proudest motor car. One was painted twelve years after the other.



The Most Distinguishing Mark of the *Most Distinguished* Motor Car

SUPERLATIVES are singularly apt when applied to the fender lamps that are *Pierce-Arrow* . . so intimately are these a part of *America's finest motor car.*

Behind that title, so hard-earned (which otherwise would be sheer arrogance), is the prided handwork of masters in coachcraft . . the second generation of whom are today engaged in the creation of Pierce-Arrow finenesses.

Pierce-Arrow reflects, also, the thinking of many great engineers, and the management of men who put reputation before all things, in the trusteeship that is theirs to preserve.

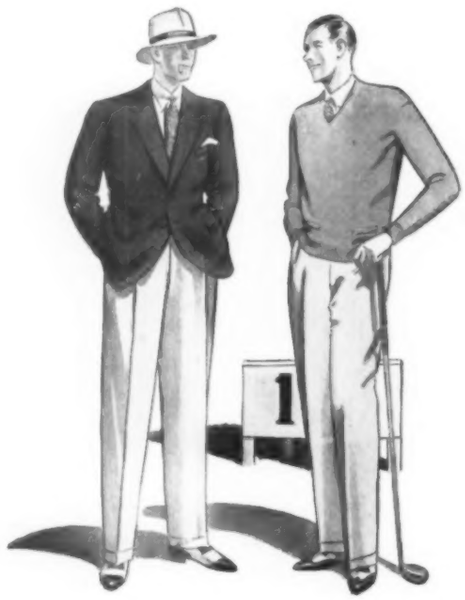
Should it appear that an exaggerated reverence for ideals is present here, the product itself bears even greater testimony to this very genuine attitude.

Pierce-Arrow today finds expression in three new groups of automobiles, which, for sheer beauty and distinction, were not conceivable without great tradition to draw upon and a patrician pride to inspire.

PIERCE-ARROW

Three New Groups of Straight Eights . . 132 to 144-inch Wheelbases . . $2695 to $6250 at Buffalo

(Custom-built Models up to $10,000)



Gentlemen's Clothes

OF CHARACTER

FOR GOLF AND SPORTSWEAR

The newer style interpretations of correct apparel for the golfer and sportsman are presented in distinctive garments which provide ease and comfort to the wearer

These clothes for wear on turf and field are thoughtfully tailored for us by Hickey-Freeman. Accessories by internationally recognized makers

ILLUSTRATED GOLF BOOKLET ON REQUEST

F. R. TRIPLER & CO.

Outfitters to Gentlemen · Established 1886

MADISON AVENUE AT 46 STREET

New York

kitchens, meals at top speed, and sliding windows in the roof through which may be observed the Scenic Wonders of the Western Hills.

And yet the truth is that a Model T was daddy to them all. There was a young man from Missouri who had reached Los Angeles by way of telephone companies and street car shops in Kentucky, Texas, and Arizona; a $75,000 mining stake (followed rapidly and irrevocably by the panic of 1907); and a tire manufactory in Cleveland. Once arrived in Los Angeles, he did as the Romans did and sold real estate. The upshot of which venture was the more or less unintentional acquisition of an auto parking station. And to the parking station came the Ford. It came every so often with one load of paying passengers, and it went out again from time to time with another burden of the same. These maneuvers interested the young man from Missouri. The Ford went south. The young man from Missouri wheeled out his Stanley Steamer and went north. If there were paying passengers to the south, there should also be paying passengers to the north. And there were. The result was that the auto parking station became a junction. And eventually in 1915 the young man from Missouri, Mr. Charles Francis Wren, and the owner of the paternal Ford, Mr. A. L. Hayes, got together. They became the Pickwick Stages, and the thing was done. It only remained to pour all their earnings back and take none of their profits out and squeeze and scrape and worry and plan for another ten or fifteen years, and Pickwick was a $15,000,000 corporation with a thousand-odd modern motor coaches built in its own $200,000 works to its own designs (powered by Pierce), a chain of broadcasting stations, planes, hotels, service stations, and several thousand employees. Last year Pickwick consolidated with Southern Pacific, Greyhound, and Yelloway to bring the whole western network of motor stages into one system. Pickwick owns one-third of the holding company (Pacific Transportation Securities, Inc.), and Charles Francis Wren is chairman of the executive committee.

In latter years it has not been necessary for Mr. Wren to pour *all* his earnings back. He lives in the fashionable quarter of Los Angeles on two floors of an apartment house, furnished in part by art pieces collected by Mrs. Wren and her daughters Gladys (twenty) and Alsacia (nineteen) during a trip abroad. The other members of the household are Mr. Wren's two sons, Charles (twenty-two) and Donald (seventeen). There is a yacht, a very fine automobile, famous cigars, a few clubs, no lodges, and not much church. Mr. Wren does not drink (no principle involved) and prefers his family to other amusements. But he is not altogether a domestic man. For one thing he is extremely eloquent and vivid in his speech. "He can cuss," admiringly observes the pilot of Gladys as he backs her to the curb. "Oh, man! How that little guy can cuss!"

Cuppia to Lewine

A PAIR of New York commodity traders as effective as the famed Tinker-Evers-Chance double-play combination are J. Chester Cuppia, of E. A. Pierce & Co., and Jerome N. Lewine, of Henry Hentz & Co. At the opening of the New York Hide Exchange last June, Cuppia sold the first lot—40,000 pounds of August hides—to Lewine. Both are on the board of governors. The two also work together in the Rubber Exchange of New York, Lewine as a governor and Cuppia as treasurer. They hold the same offices on the newly-formed New York Burlap and Jute Exchange. They both got their start in cotton. Cuppia began his career by losing his accumulated savings of $10,000 in just three days of operations on the Stock Exchange. An inheritance of $5,000 came along subsequently, and he put it into cotton. Though he lost it all, and something besides, in an ill-timed flyer in spot cotton, he stayed in the cotton market until he had established his own house, J. Chester Cuppia & Co. When this was absorbed by the great wire house of E. A. Pierce, Cuppia became a Pierce partner. He has one ambition: that his boy should go through Princeton, something which he himself, because of family reverses, was not able to do.

There are not many commodity traders who do not know, and like, Jerry Lewine. He is president of the National Raw Silk Exchange in addition to his governorships of the leather and the rubber exchanges. In Henry Hentz & Co. he is a senior partner, along with Dr. H. B. Baruch, of the famed Baruch tribe. Though Hentz & Co. has become more of a Stock Exchange

Thanks to the GAS COMPANY

. . . . . a new and higher standard of comfort has been established in American homes

MODERN SCIENCE has made it possible to put an end to furnace-room slavery. Aided by its gas companies, progressive America is rapidly abandoning the hand-fired furnace.

• Today, it is a question whether a house can be termed truly and completely modern unless it is automatically heated with gas, the dirt-free, waste-free, instantly responsive fuel which requires no furnace-tending. To build a house this year in a gas-served locality and not install gas-heating is to gamble with the future value of the property.

• In the years to come the prosperity of gas companies and the happiness of their communities will become more and more interdependent as the spread of house heating by gas brings their interests closer and closer together.

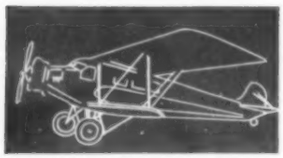
BRYANT GAS HEATING

© 1930. BHMC

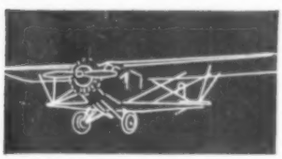
THE BRYANT HEATER & MANUFACTURING CO.
17884 St. Clair Avenue — Cleveland, Ohio

SKIES
PLANES
MONEY

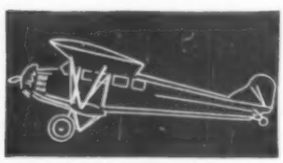
BUSINESS has definitely turned to the air in its endeavor to extract greater value from every working hour. And business, to carry on this most modern, intelligent program, seeks a plane that is constructed, sold and designed to operate upon the sound business fundamentals of speed, safety, convenience and economy. Such is the Buhl Airsedan. The ability to delegate responsibility through proper channels distinguishes the successful executive. He cannot err if he thinks of Buhl when he considers the ideal plane to carry on his individual or corporate business up above.



The Buhl Senior Airsedan is an eight-place dual-control plane, priced at $18,500 with the Wasp engine and $19,500 with the Hornet or Cyclone.



The Buhl Sport Airsedan is a three-place dual-control plane, priced at $12,000 with J-6 Wright Whirlwind engine and $11,000 with the J-5.



The Buhl Standard Airsedan is a six-place, dual-control plane, priced at $13,500 with the J-6 Wright Whirlwind engine.

We will gladly mail to any executive an interesting illustrated brochure on "Aviation and Business"

BUHL AIRCRAFT COMPANY
MARYSVILLE, MICH.

Buhl
Air—Sedans
SENIOR · STANDARD · SPORT

house in late years, Lewine makes its influence felt in the commodity markets. He sold his house in Brooklyn not long ago, and now owns the former Mencken estate, Hilltop Farm, Hartsdale, just outside New York in Westchester County. On his twenty-four acres there he grows flowers that are noted even among Westchester hothouses. There is also a quarter-mile track for horse racing, for he himself rides well, and his children, Mina and Jerome Jr., have their own ponies.

Anthem weakness

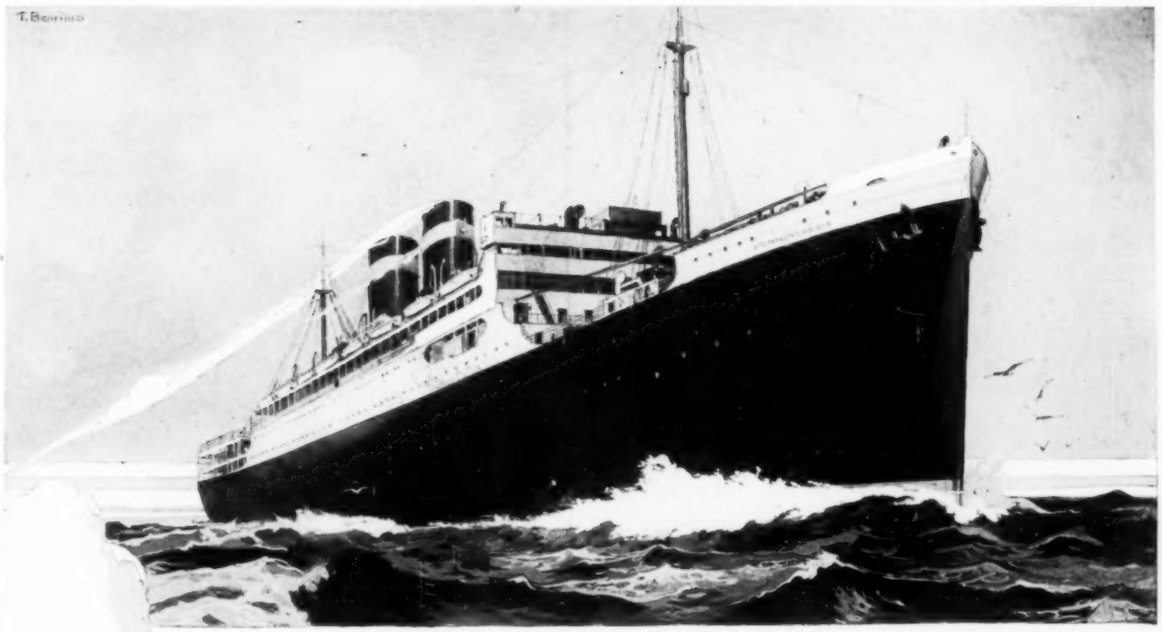
EVEN Mr. Ray Long, the enterprising *Cosmopolitan* editor who bagged Coolidge, would find it difficult to induce Mr. Julius Rosenwald to write an autobiographical sketch about "My First Pair of Double-Seated Bike Pants." He probably could not persuade R. Arthur Wood, the former president of the Chicago Stock Exchange, to expound his "Neat System for Picking up Old Razor Blades." These were the subjects which Messrs. Rosenwald and Wood discussed, however, at a recent meeting of The Guild of Former Pipe Organ Pumpers (Chicago Loft). The Guild, whose motto is "Pump, for the Wind Is Fleeting," was founded in 1926 as "a nonsectarian, nonpartisan, nonprofit, and nonessential organization." There is one membership requirement: proof of having once upon a time been an organ pumper. Mr. Rosenwald proved to the satisfaction of the Committee on Admissions that he had, as a boy, pumped the organ in the temple attended by his parents. Another notable member of the Chicago Loft, Benjamin Franklin Affleck, president of Universal Portland Cement Company, produced evidence of having pumped the town church organ in his home town of Belleville, Illinois.

The Guild was conceived and established by Chet Shafer, of *Saturday Evening Post* fame. A banquet in Detroit, at which he found that most of those present had gotten their start in life not by selling newspapers but by pumping an organ in some country church, gave him the idea. There are now almost a thousand members scattered over the country, among them being Will Hays and Senator James Couzens, of Michigan. The Chicago Loft holds a convention every spring at which Mr. Rosenwald takes his turn at pumping the organ while his fellow members sing hymns, drink beer. In recognition of his pumping abilities, he was last year presented with a huge cast-iron pigeon, a gift probably inspired by the nation-wide campaign the Guild has launched "for the conservation of the wild cast-iron animal life so fecund in the final decades of the past century." The officers of the Guild are called after the organ stops, with Chet Shafer at the head as Grand Diapason.

Benjamin Affleck, once Grand Quint, is now merely a Fellow Pumper (F.P.). There is a bitter dispute between him and Mr. Rosenwald, the present Grand Quint, as to which is the more proficient at organ pumping. Mr. Affleck's professional pride was outraged when Mr. Rosenwald characterized his pumping as "uncertain, unsteady, and undependable," and when he (Mr. Rosenwald) went on to insinuate that he (Mr. Affleck) was notoriously weak on anthems, the rupture was final.

Twin beds

SOME fifteen years ago the Simmons Manufacturing Company built a great number of twin beds and then found that few respectable people would sleep in them. The double bed was as inevitably a part of genteel living as the fern-stand in the living room window or the ice cream in the Sunday dinner. On this statement of the original position, all sides agree; on the solution to the Simmons problem, stories differ. The Simmons people probably credit their extensive advertising campaign in the press; other informants assure us that the situation was saved by the appearance of a *deus ex machina* in the shape of a smart publicity man. "Build more twin beds," cried the publicity man, "and I will sell them!" It seems that Simmons did so. It is certain that presently bright young men were writing poems about twin beds and sending them to columnists, comedians were putting low cracks about twin beds into their revues, and all along Broadway jokes were popping, wisecracks were exploding on the subject of twin beds. From Broadway the stories traveled via the traveling salesman route into the provinces. Within a year people were laughing at twin beds and inevitably buying them. And American sleeping, if not living, had indubitably changed.



The combined tonnage of Admiral Dewey's squadron in the battle of Manila Bay was 19,000 tons—less than the tonnage of the *Pennsylvania* or her sister ships, the *California* or the *Virginia*, the new electrically driven vessels in the service of the Panama Pacific line.

BIGGER than Dewey's whole fleet

BUILT not for war but for peace, the 35,000-ton S. S. *Pennsylvania* is not only bigger than all the ships of Dewey's heroic squadron put together, but more efficient than any of them. Her 17,000-hp. motors have enabled the *Pennsylvania* and her sister ships, the *California* and the *Virginia*, to cut the coast-to-coast schedule of the Panama Pacific line to thirteen days, and have set a new standard of noiseless, vibrationless ocean travel.

General Electric engineered and built the electric equipment of these magnificent new vessels. Other General Electric engineers and research scientists are doing equally important pioneer work on land and for the new traffic of the air. The G-E monogram appears on thousands of electric products and appliances as a symbol of research, an assurance of advanced electrical correctness, dependability, and service.

FOR THE HOME—General Electric and its associated companies manufacture a complete line of electric products and appliances, including G-E MAZDA and G-E Edison MAZDA Lamps, G-E refrigerators, G-E fans, G-E vacuum cleaners, G-E wiring systems, Edison Hotpoint ranges, percolators, toasters, and other Hotpoint products.

FOR INDUSTRY—Several thousand electric products and appliances, including generating and distributing apparatus, motors, electric heating apparatus, street lights, floodlights, traffic lights, airport lights, Cooper Hewitt lights, Victor X-ray apparatus, motion-picture apparatus, electric locomotives and equipment, and street-car equipment.

GENERAL ELECTRIC

JOIN US IN THE GENERAL ELECTRIC HOUR, BROADCAST EVERY SATURDAY AT 9 P.M., E.S.T., ON A NATION-WIDE N.B.C. NETWORK

A new LUXURY comes to the home

THE song of the brook racing to the sea, the crescendos, the diminuendos of winter's winds, the caressing softness of a spring breeze — the emotions of life's greatest moments—all are expressed in the gorgeous flood of music with which a pipe organ transforms the home.

The Wurlitzer Reproducing Residence Organ opens to you entirely new opportunities for the enjoyment of this greatest of luxuries. No great concert pipe organ contains finer materials and workmanship, none is more beautifully voiced than the new Wurlitzer. No residence pipe organ is more responsive to the touch of the organist, or more superb in performance when played by reproducing music roll. Yet this beautiful instrument, ready to bring you the world's best in music, at the touch of a button, is so compact that it is easily installed in almost any home, and you will be surprised at its comparatively moderate cost.

WURLITZER
Reproducing Residence
ORGAN

You are invited to hear and play this magnificent organ at your nearest Wurlitzer studio—New York, Chicago, Los Angeles, Cincinnati, Cleveland, Detroit, Pittsburgh, Buffalo.

Our beautifully illustrated and informative brochure on the Wurlitzer Reproducing Residence Organ, and its installation in the home, will be of special interest to you. A request mailed to any Wurlitzer store will bring you a copy, without obligation.

© Wurlitzer 1930

Banff

... SOCIAL CAPITAL OF THE CANADIAN ROCKIES

18-HOLE
GOLF COURSE

▾

TWO
SWIMMING POOLS

▾

"EN-TOUT-CAS"
TENNIS COURTS

▾

RIDING

▾

INDIAN DAYS
JULY 20-22

▾

OFFICIAL
TRAIL RIDES
JULY-AUGUST

▾

HIGHLAND
GATHERING
AUG. 29-SEPT. 1

SUMMER SPORT AND SOCIAL GAIETY MEET AT BANFF

Summer sport and social gaiety meet at Banff... to make a Rocky Mountain rendezvous for smart society. You canter along spruce-bordered bridle paths on nimble gaited saddle horses. You clamber up mountain trails on trail-wise ponies ... or with Swiss guides, if you have higher aspirations. You shoot golf on a $350,000 course with a $100,000 club-house ... imagine bent-grass greens in the Rockies! ... first drive smack across the jade-green, foaming Spray. You knock off a few sets of tennis on *en-tout-cas* courts. You give swimming parties in the great out-of-door sulphur pool rimmed with a sunning-and-loafing terrace. The sulphur water has healing qualities like the famous spas of Europe. Beside it, lies a fresh water pool to finish your dip.

In the evening, there is dancing with a corking 10-piece orchestra...novel gala entertainments...later, perhaps, a lovely motor ride over smooth roads, while the moonlight floods the mountains. Every time you look up, day or night, there is that unmatched and unmatchable view of twenty-mile valley and nine thousand foot peaks. Every time you want anything, there is the courteous service of the baronial hotel. Banff...home of gala Indian Days and a great Highland Gathering...Canada's summer social center, accustomed to pleasing royalty.

CANADIAN PACIFIC
BANFF SPRINGS HOTEL
BANFF

Listen in WJZ and associated stations, every Sunday 9:15. E. S. T., 8:15, C. S. T. Alfred Heather Light Opera Company, also appearing at Banff during July and August.

Come up this summer and stay!... Special monthly rates for families, European plan. During May, June and September, single with bath, $8 up per day; double, $14 up. Period suites for two, $35 up. Rates higher during July and August. Special servant quarters. Something doing all summer long!

Opening May 14th. For reservations, rates, information, write *Banff Springs Hotel, Alberta, Canada,* or any Canadian Pacific Office: New York, Chicago, Atlanta, Boston, Buffalo, Cincinnati, Cleveland, Dallas, Detroit, Indianapolis, Kansas City, Los Angeles, Memphis, Minneapolis, Omaha, Philadelphia, Pittsburgh, Portland, San Francisco, St. Louis, Seattle, Tacoma, Washington. In Canada: Montreal, Nelson, North Bay, Ottawa, Québec, Saint John, Toronto, Vancouver, Victoria, Winnipeg.

BANFF SPRINGS.....A CANADIAN PACIFIC HOTEL

A *home run into the street* . . . *and the outfielder* STEPS INTO YOUR PATH !!

It's those quick, unexpected emergencies that make you realize that you can't have a *surplus* of safety in tires.

Big mileage has been the most popular reason for General's fifteen years of quality leadership. But now, there is a bigger factor—a more vital consideration behind the nation-wide swing to General. It's that *extra margin of safety.*

When the sudden emergency comes up—the split second that tests all the *ability* of your tires to grip and hold—how much is the extra margin of a few feet worth—sometimes even a few inches—when it separates you from a probable fatality?

The *Dual*-Balloon multiplies the natural tendency of rubber to grip and hold. There are extra cushions of soft rubber, built-in shock absorbers, that let the whole tire grip the road with a closer, clinging traction. This extra "give" inside the tire, plus the lower pressure and the biggest mileage you've ever known all combine to give you the full measure of safety.

Safety in the freedom from running on risky rubber at high speeds. Safety in the ability to negotiate a sudden turn at straight-on speed when there is no alternative. Safety in the ability to take hold and stop *just short* of an impact.

***Split seconds that make you realize the priceless value of that* EXTRA MARGIN of SAFETY**

These are not fictitious claims for the *Dual*-Balloon. They are facts that you can prove by any comparison you want to make. They are facts that have made millions of car owners realize the priceless value of that extra margin of safety. The General Tire and Rubber Co., Akron, Ohio.

—goes a long way to make friends

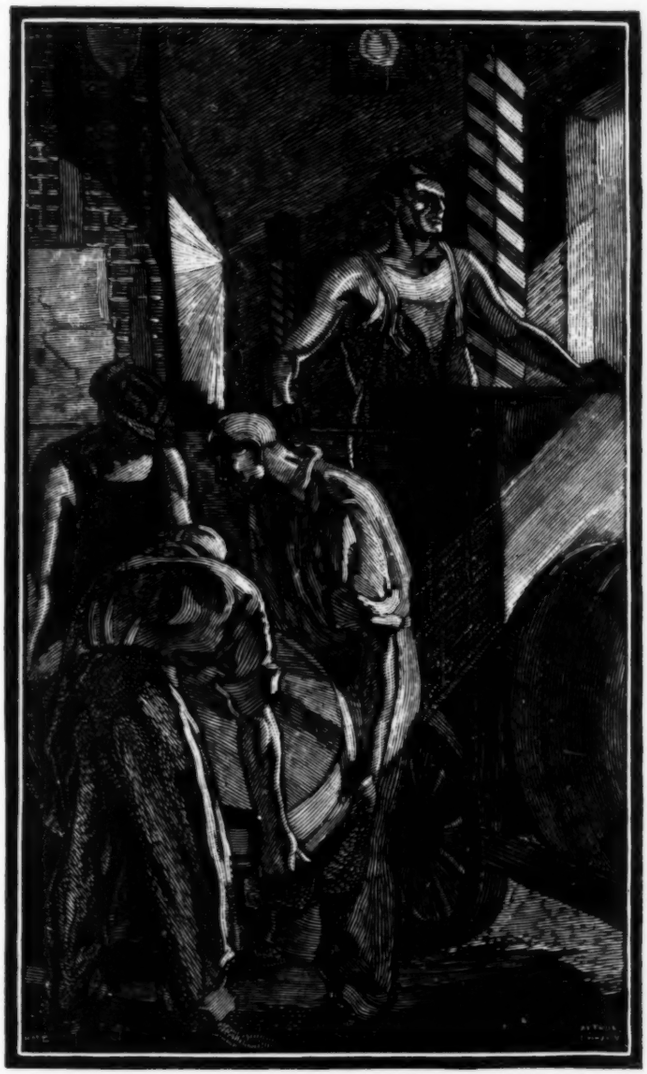
Complete motion picture films (including slow motion detail) showing a series of non-skid tests of all types of tires on snow and ice and on wet pavement, will be furnished Automobile Clubs and other organizations for use in safety first campaigns. Car owners can obtain illustrated bulletins of these tests. Address your General Tire Dealer or the General Tire and Rubber Co., Akron, Ohio.

THE WORLD'S SAFEST TIRE

The GENERAL *Dual*-BALLOON 8

NORTON

Grinding Wheels
Grinding and Lapping Machines
Abrasives for Polishing
Refractories
Pulpstones
Porous Plates
Floor and Stair Tile
Abrasive Aggregate



Wood block engraving by Howard McCormick from Mural by Arthur Covey

When the Norton Grinding Wheel is taken from the kiln it is not simply a grinding wheel with the sole function of wearing down metal, but a production tool engineered and built to perform a specific high precision work in the fashioning of iron, steel, steel alloys, glass, marble and other materials.

NORTON COMPANY · WORCESTER · MASSACHUSETTS · U · S · A

The New York Trust Company

Capital, Surplus and Undivided Profits $47,000,000

DOMESTIC
and
FOREIGN BANKING
FACILITIES

Trust Services

Personal Services

---

100 BROADWAY
40TH STREET AND MADISON AVENUE
57TH STREET AND FIFTH AVENUE

The service of this company includes the expert planning of office space, interior architectural design, decoration, lighting and furnishing, together with the execution of every detail by a trained, unified organization of specialists. Recommendations and sketches furnished without obligation to business executives and professional men.

The casually minded man would say that the chief things of value in this executive office were the rich furnishings, the mantel and the woodwork. But they are not all, as hundreds of our distinguished clients would agree. The "plus-values" in every office created by Wholey are just as tangible, although they never appear on the surface. They are peace of mind, inspiration, cordiality, the evidence of superiority. Such things are not attained simply by accident. That is why America's leading executives and professional men come to us!

The WILLIAM F. WHOLEY CO. *Inc.*

Equipment Specialists

11 East 36th Street, New York

Office Furniture ~ *Interior Decoration* ~ *Office Planning*

Deliveries

The rhythmic tempo of Modern Business increases daily. Diminished inventories are one of the results of this acceleration. Today's stock must be moved tomorrow. Keeping the pace frequently depends solely on unclogged channels of physical distribution—swift and certain deliveries. . . . General Box Company with its nation-wide facilities and local service at many points guarantees in any emergency a dependable supply of boxes and crates, which, in turn, insures trouble-proof shipping schedules. . . . In the aggregate, the thirteen modern plants of General Box Company are the productive power behind General Box Engineers and their day by day work of designing money-saving boxes and crates. You are invited to make use of these reliable resources.

GENERAL BOX COMPANY

44 WEST ILLINOIS STREET • CHICAGO ILLINOIS

One Service Nation Wide

Among those with whom we have cooperated—

NATIONAL BISCUIT COMPANY (Export)

•

J. C. PENNEY COMPANY

•

THE WHITE COMPANY

•

THE MAYTAG COMPANY

•

KOHLER OF KOHLER

1,200,000 Consumer Inquiries

600,000 PERSONAL CALLS AND 600,000 COUPONS BY MAIL

At 9¢ Each, in 13 Months

FOR several years, many advertising men, with the welfare of the business at heart, have urged a return to the methods of common honesty.

Their criticism, aided by the inherent weaknesses of the gross types of advertising they condemned, has borne fruit. Signs of a return to sincerity are manifest in advertising columns today.

We wish to submit the results of a campaign that made sincerity its first principle.

The opportunity came to introduce and sell to the most critical market in America a new product, but one whose advertising would have to compete with the glaring excesses of the day—the campaigns that have flourished through the immoderate use of purchased testimonials and intemperate claims.

After research, two conclusions were drawn: First, that the most genuine expression of faith in the product would be to offer a complimentary package to the prospective user. Second, That this plan would not succeed without advertising copy so manifestly sincere as to disassociate in the public's mind, this different offer from ordinary sampling.

The campaign was begun on that basis.

A rotogravure page in the New York Times in April, 1929, produced 55,000 replies; and smaller advertisements produced corresponding results.

In June, New York's predominant specialty shop mailed a message to 85,000 credit customers, of whom 12,000 visited the store to obtain the complimentary package. Soon 200 leading stores in as many cities sent the same message to 1,500,000 chosen customers; 600,000 responded. This advertising material and its postage was paid for by the stores. There was no advertising cost to the manufacturer, no commission to the agency. This plan, by extensively utilizing the cooperation of the stores resulted in a reduction of 50 per cent. in what would have been the manufacturer's normal sampling costs.

In the Fall a rotogravure page in the New York Tribune pulled 24,000 coupons, and one in the New York Post, 4,000.

In February the first advertisement in the national magazine series (half-page in 12,000,000 circulation and full-page in 4,000,000) pulled 50,000 replies from a well-hidden offer. No coupon was used. In March, a page in 12 magazines (16,000,000 circulation) pulled 500,000 . . .

Dramatic results. More so, since repeat sales substantiate the consumer acceptance that such results imply.

This campaign has been praised by editors and competitors. Some have gone so far as to call it the notable campaign of its type. Be that as it may, their comments represent to us not so much an opinion on the power of this plan as a hearty welcome to a long-needed return to the lasting principle of sincerity.

THE business policy under which this agency operates conduces to sincerity in all phases of its work. For example, its profit is divorced from variations in the size or allocation of a client's appropriation, and is established by a *fee system* based on the work to be done.

This plan insures freedom from prejudice in estimating the relative advantages of one course of action as compared with another; in short the natural causes of bias in an agency are overcome. There is nothing to deflect the agency's interest from whatever plan of campaign is best for the client.

We shall be glad to furnish details of the above campaign to business executives and bankers who may be interested.

COWAN & DENGLER

ADVERTISING • MERCHANDISING • SALES COUNSEL

NEW YORK

THE *protection of a Fortune is usually assured by the creation of a planned investment program which is designed to meet the Investor's individual needs.*

WE OFFER YOU THE FACILITIES OF THIS INVESTMENT ORGANIZATION

STONE & WEBSTER AND BLODGET
INCORPORATED

NEW YORK · BOSTON · CHICAGO · PHILADELPHIA

Statistics

THE United States accounts for only 7 per cent of the world's population, but consumes 72 per cent of the world's silk, 69 per cent of the world's crude petroleum, 56 per cent of its rubber, 53 per cent of its tin, 48 per cent of its coffee, 47 per cent of its copper, 42 per cent of its pig iron, 36 per cent of its coal, and 21 per cent of its sugar. Twenty-three per cent of the world's automobiles, 60 per cent of its telegraph and telephone equipment, 33 per cent of its railroads are operated by the United States. Nearly one-half of the world's gold is in the United States, where are two-thirds of the total world banking resources.

. . .

In a telephone conversation between two persons in the same city, there is a minimum of 465 chances for mechanical breakdown—15 movable contacts, 400 mechanically secured or soldered connections, and 50 others. If there is a switchboard at each end, there are some 200 more contacts. Between Chicago and New York there are many more opportunities for contacts to fail—40,000 mechanically secured connections, 1,500 relay, and 9,000 other contacts.

. . .

By no means negligible is the government printing bill resulting from the long Senate debates on the tariff bill through the fall and winter. Of the total, some $131,900, 42 per cent was incurred by the oratory of the Democrats, 30 per cent by the Republicans, 28 per cent by the Insurgents. Senator Reed Smoot's speech reporting the bill occupied twenty-two pages of the *Congressional Record*, cost $1,100. Three speeches by Senator Robert La Follette cost $3,100.

. . .

One's risk, in boarding a trolley car, is infinitesimal. Last year there were only seven fatal accidents on U. S. trolleys, which traveled a total of 256,849,500 miles—one death for every 36,692,785 miles. This compares with the newest method of travel: 78,940,161 air miles, with 183 casualties—one death for every 43,401 miles.

. . .

The cost of a Ford at the factory is just about the same as the cost of a pound of beefsteak at the wholesaler's. The Ford sedan brings 20.8 cents per pound, and beef 21.5.

Automobiles of all classes compare in price per pound with commodities as follows:

Coffee	$0.077
Cotton	0.159
Rubber	0.168
Pork	0.295
Beef	0.216
Cars under $1,000	0.271
Cars—$1,000 to $2,000	0.378
Cars—$2,000 to $5,000	0.671
Rayon	1.150
Silk	4.530

. . .

The total resources of investment trusts have increased in the last five years, from less than $10,000,000 to more than $3,000,000,000. The year 1929 accounted for $2,000,000,000 of this growth.

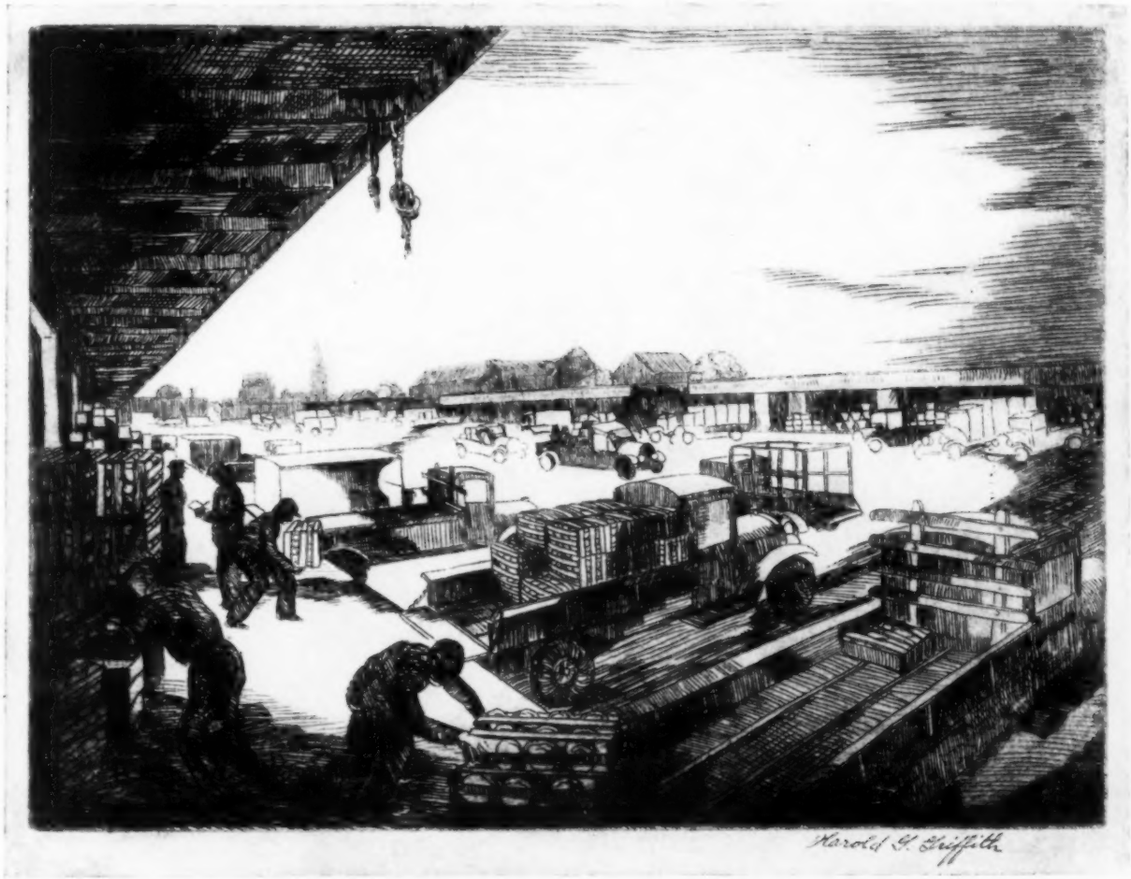
. . .

Studies of the distribution of an automobile selling for some $1,100 show that 29 per cent were bought by laborers; 30 per cent by foremen, clerks, and salesmen; 14 per cent by housewives; 27 per cent by merchants and manufacturers.

. . .

The air transport line from Santiago, Chile, to Mendoza, Argentina, is the highest regularly operating line in the world. Oxygen tanks are provided for the passengers as the plane crosses the Andes at a height of from 18,000 to 25,000 feet.

IF YOU WANT AMPLE TERMINAL FACILITIES



CLEVELAND'S steam railroads have 26 modern and efficient freight stations in the Cleveland area. With a daily movement of 4,000 cars, the average car is handled in less than five hours. Serving these stations are 72 team tracks, 11 commercial warehouses, with 1,600,000 square feet of storage space, and 6 cold storage warehouses which will supply the newest and most modern terminal facilities for both shipper and jobber until Cleveland's population exceeds 2,000,000 people.

¶ River and lake frontage supply adequate facilities for handling water shipments. Among these is "the finest terminal for handling water shipments of automobiles along the Great Lakes." Interurban, truck and air terminals are equally advanced in efficiency and convenience.

¶ Manufacturers and jobbers interested in a location where terminal facilities seldom occasion delay or loss of shipments, will find this important factor at Cleveland. For specific data address this Bank.

©G.T.Co.

GUARDIAN TRUST COMPANY

CLEVELAND, OHIO

RESOURCES MORE THAN $165,000,000

Our Service to Security Traders

CUSTOMERS maintaining margin accounts with us expect and receive prompt and efficient executions of trading orders from our specially trained staff of customers' men and floor brokers.

Investigations concerning stock market conditions and movements are available in the form of a daily market letter and special bulletins.

These facilities are available to any investor or trader
Your inquiry is cordially solicited

HORNBLOWER & WEEKS

ESTABLISHED 1888

BOSTON NEW YORK CHICAGO CLEVELAND
DETROIT PROVIDENCE PORTLAND, ME. PITTSBURGH

Members of the New York, Boston, Chicago, Cleveland, Pittsburgh and Detroit Stock Exchanges and the New York Curb Exchange

Alfred Nelson Co

580 FIFTH AVE. N. W. Corner 47th Street NEW YORK

We are noted* for making the finest strictly hand-tailored to measure *all occasion attire* for *men* and *cross saddle* riding and hunting *kit* for *women.

ART IN INDUSTRY

In connection with the opening of their new first floor and the painting therefor of murals by Mr. Boardman Robinson, the Kaufmann Department Stores, Inc. of Pittsburgh, Pa. announces a prize essay contest on the subject "Art in Industry", the prize to be $1,000 and the prize-winning essay to be published in a forthcoming issue of FORTUNE.

Rules of the Contest

(1) The Contest is open to anyone (excluding employes of Kaufmann Department Stores, Inc. or Time, Inc.) who submits an essay of less than 5,000 words which deals with some particular phase of or with the general subject of Art in Industry.

(2) The contest will open Saturday, May 31, 1930. All manuscripts must be in the hands of the Art in Industry Contests Editor, Kaufmann Department Stores, Inc., Pittsburgh, Pa., by midnight, Wednesday, October 1, 1930. Manuscripts received after October 1 will not be considered.

(3) The prize-winning essay will be published in a forthcoming issue of FORTUNE.

(4) The essays will be judged by a committee to be announced later.

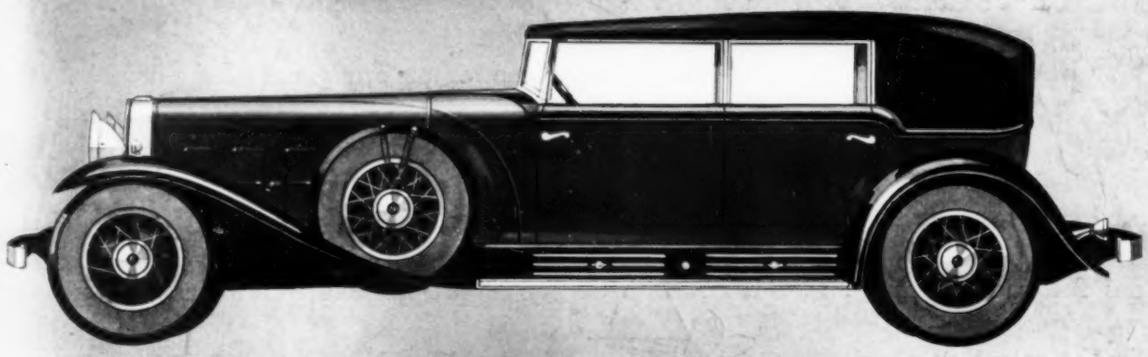
(5) All manuscripts must be typewritten and have the name and address of the contestant in the upper left hand corner of each sheet of paper.

(6) Only one essay may be submitted by each contestant.

(7) Prize for the winning essay will be $1,000. In case of tie, each winner will receive the full amount of the prize. All information regarding the contest may be obtained from the Art in Industry Contests Editor, Kaufmann Department Stores, Inc., Pittsburgh, Pa.

(Signed)

Kaufmann Department Stores, Inc.
Fifth Avenue **Pittsburgh, Pa.**



SIXTEEN CYLINDERS

Performance such as the world has never witnessed . . . The most highly individualized of all motor cars

CADILLAC MOTOR CAR COMPANY DIVISION OF GENERAL MOTORS

Great Out-of-Doors calls your boys and girls

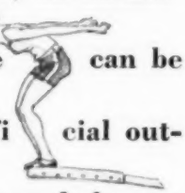
TOPS of lofty pines beckon in the breeze . . . cool water murmurs an invitation . . . sunshine smiles in welcome. ✧ ✧ ✧ "Come," they are saying to your sons and daughters, "come to the great out-of-doors and play and swim and hike and roll up in ponchos under the stars; come

to camp where, nut-brown and sturdy, you will store

up health and laughter, self-reliance and good comradeship for the rest of your lives." ✧ ✧ ✧ Surely you will let them go this summer. ✧ ✧ ✧ It is only a question of choosing the right camp, of

being very certain that it is well-regulated and best suited to the age of your children. ✧ ✧ ✧ Careful parents,

hundreds of them every year, find the answer at our Camp Bureau, an authorized, yet strictly unprejudiced source of information, where more



can be learned about the better camps than catalogues can possibly tell. ✧ ✧ ✧ Official outfitters for many camps, and familiar with the requirements of all, we can help you assemble exactly the right equip

ment, middy blouses to tennis rackets, hiking boots to swimming suits. ✧ ✧ ✧ Please do not, however, infer that the slightest

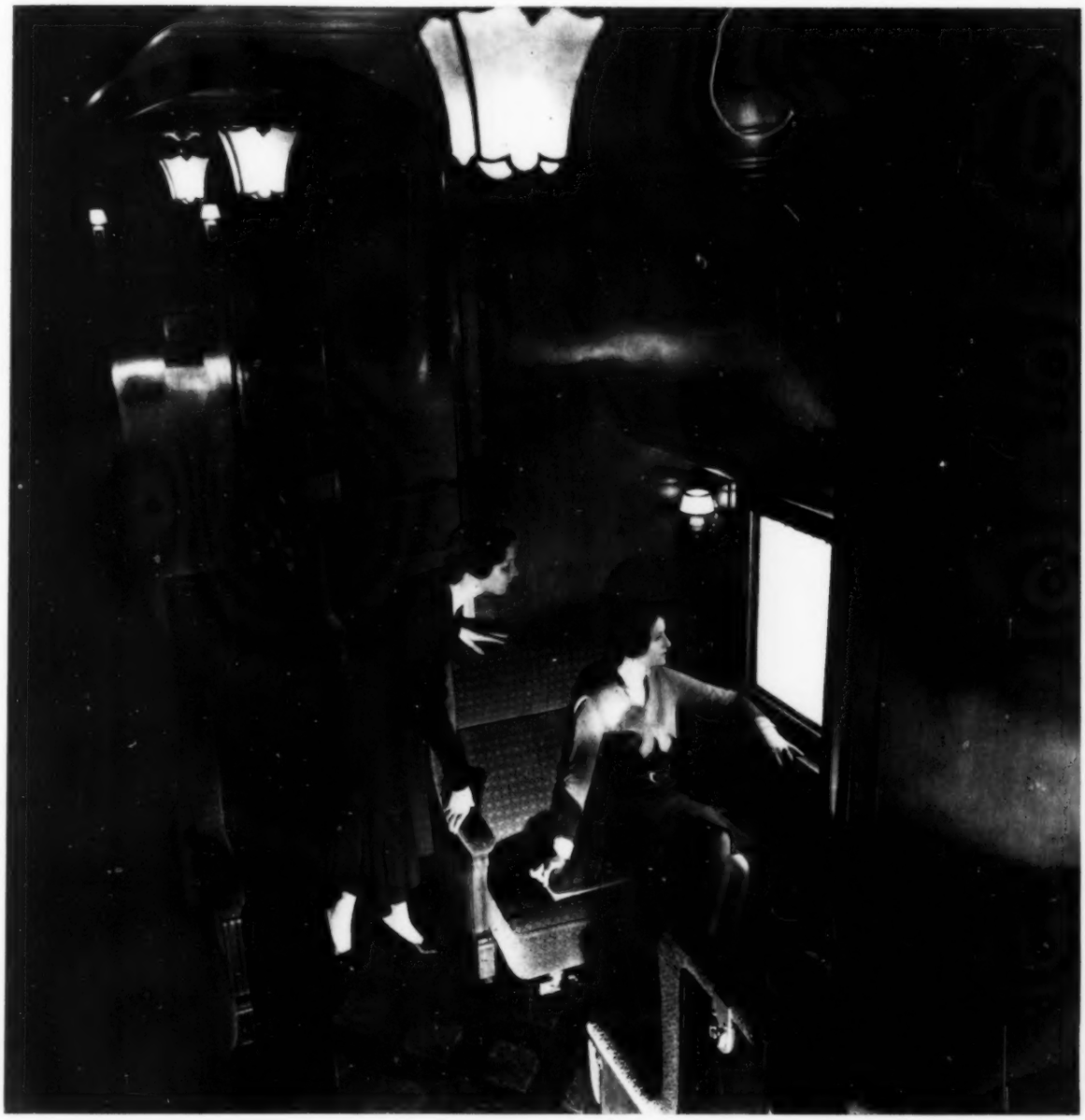
obligation is implied. ✧ ✧ ✧ Whether or not you decide to outfit your prospective young campers here, you are most cordially invited to visit or write us.

THE SCHOOL AND CAMP BUREAU

FOURTH FLOOR

Marshall Field and Company

RETAIL · CHICAGO



Newest

• Summer, 1930, the newest and most luxurious of railroad passenger equipment enters the service of the North Coast Limiteds for the satisfaction of travelers between Chicago and the Northern Pacific coast.

Just Ten

● Roominess everywhere . . . . No "lower 12's" or "upper 16's" on the North Coast Limiteds: these new Pullmans have just ten sections—fewer guests per car, more space for comfort. (Even the washbowls have shelves for toilet cases.)

NORTHERN PACIFIC
YELLOWSTONE PARK LINE

CARNEGIE LIBRARY OF ATLANTA

Elbow Space

• Train Boudoirs, 1930 style . . . conveniently large, with space to wave elbows. And not only spacious, but tastefully decorated in restrained modern style.

Suites

• Private connecting rooms—Drawing Rooms and Compartments —may be engaged on the New North Coast Limiteds. They have clothes-wardrobes, shoe-boxes and modern heat and ventilation control.

NORTHERN PACIFIC
YELLOWSTONE PARK LINES

NORTHERN PACIFIC
YELLOWSTONE PARK LINE

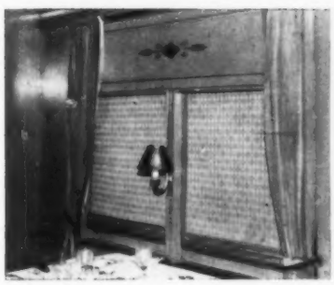
Luxury

• A far cry from the Victorian era in Pullmans . . . These drawing rooms on the North Coast Limiteds, richly appointed, softly lit with parchment shaded lamps, attract the discriminating traveler, be he bride-groom, diplomat or vacationing banker.

Color

• New colors endow North Coast Limited interiors pleasantly throughout the train. The Compartment pictured here is done in rose, green and soft walnut. (Box-spring beds are thirteen inches deep.)

Diners of Today



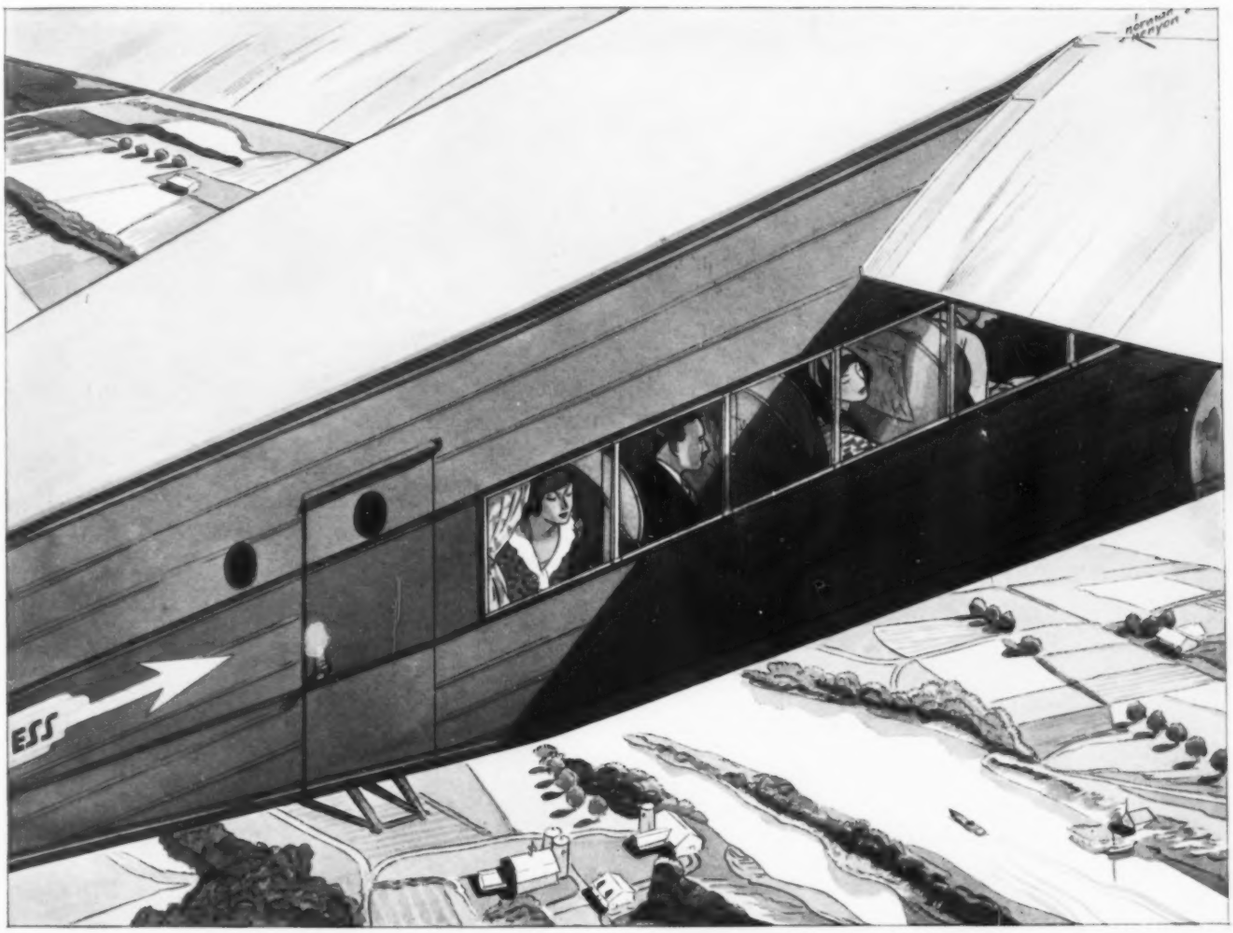
• Dining cars, in newest manner, have been created for the New North Coast Limiteds. The beautiful dining rooms have twelve tables, serving thirty-six guests. Both draperies and shades are used at the windows. Eleven ventilators, ten fans and thermostatically regulated vapor heat in every car assure controlled temperatures at all times.

Observation-Clubs

• Let one of the Northern Pacific Railway passenger agents (in most large cities of America) describe to you the magnificent Observation-Club cars of North Coast Limited trains. From radio to soda fountains, from baths to valets, they have every desirable travel convenience.

NORTHERN PACIFIC
YELLOWSTONE PARK LINE

For western travel information and free booklets, address E. E. Nelson, 279 Northern Pacific Railway, St. Paul, Minn.



Illustrated is a Fokker F-10-A Super-Tri-Motor, which carries 12 passengers and 2 pilots.

GENERAL MOTORS CHOSE FOKKER

SHOULDN'T YOU?

PROBABLY no study ever made of the aircraft industry excelled in thoroughness the one conducted by General Motors Corporation. This world-famed institution, desirous of extending its interests to include airplane manufacture, pursued its search for an ideal affiliation with all the vast scientific and technical resources at its command. Its examination revealed one name glowing imperishably in the skies. That name was Fokker.

You may not know that Fokker has designed and built more airplanes than any other manufacturer in the world. You may not know that Fokker planes have made twice as many pioneering long-distance and trans-oceanic flights as have any other make. You may not know that Fokkers have flown more than *twenty-five million miles* on regular transport schedules, matchlessly dependable. But General Motors, fixedly intent on lending its strength where it was best deserved, knew these and other things. General Motors chose Fokker . . . Shouldn't you? Then ask for a Fokker when you fly.

Fokker manufacture now includes ten different models of airplanes: single and multi-engined types, land planes, sea planes, flying boats, amphibions. Because of economies due to production principles of General Motors, prices are probably lower than you might expect. Convenient terms may now be arranged on the GMAC finance plan. Requests for information or demonstration are invited, and will be promptly answered. Address Fokker Aircraft Corporation of America, General Motors Building, New York.

FOKKER

AFFILIATED WITH GENERAL MOTORS CORPORATION

CAUSE

There is in Goodyear one Chief Authority to which every other authority unhesitatingly defers — the Public.

Every Goodyear man feels his final responsibility to be to that Public, rather than to his foreman, superintendent, department manager, or executive superior.

In the knowledge that the Public has sponsored Goodyear's growth, and will decide Goodyear's future, every Goodyear activity is inspired by an endeavor to *deserve* and to *increase* the Public's good will.

The scrupulous adherence of a whole organization to this idea explains not only the undeniable leadership of Goodyear, but its decisive enthronement as the largest rubber company in the world.

P. W. Litchfield

President

GOOD

RESULT

GOODYEAR PATHFINDER | GOODYEAR ALL-WEATHER STANDARD BALLOON | GOODYEAR HEAVY DUTY | GOODYEAR DOUBLE EAGLE

In its responsiveness to the desires of the Public, Goodyear has developed and perfected not only one outstanding type of tire, but FOUR: *the* GOODYEAR PATHFINDER, *the quality tire that is within the reach of all; the matchlessly popular* GOODYEAR STANDARD ALL-WEATHER BALLOON; *the handsome and rugged new* GOODYEAR HEAVY DUTY, *and the incomparable* GOODYEAR DOUBLE EAGLE, *the Tire of Tires. By superior quality and value, each of these famous tires has become a powerful contributor to that eloquent testimonial of public favor: "More people ride on Goodyear Tires than on any other kind!"*

YEAR

Copyright 1930, by The Goodyear Tire & Rubber Co., Inc.

PACKARD

LUXURIOUS TRANSPORTATION

The Packard Standard Eight Sedan, while smaller than the more costly Packard Custom and De Luxe models, is still a large and roomy car—and abundantly powerful.

It embodies every Packard engineering improvement—the refined straight-eight motor with four-speed transmission, the perfected shatter-proof glass, the advanced braking system. It includes all of the incidental comforts and conveniences—the little niceties which add the extra luxury to all Packard cars.

The Grandees who ruled the West Indies in the 17th century sailed for their Caribbean empires in the ornate and luxurious galleons of old Spain

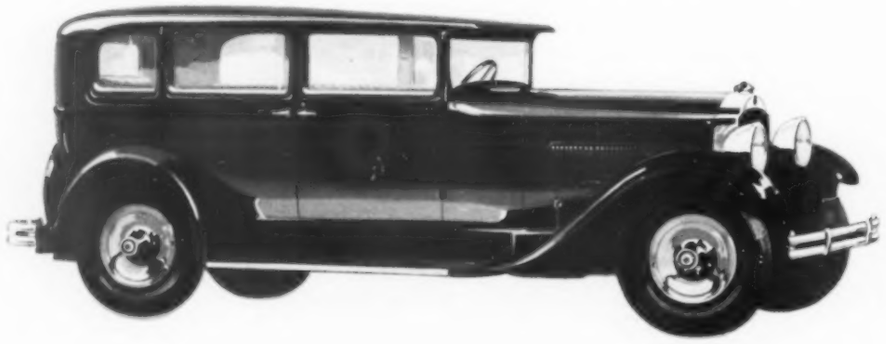
* * * *

In characteristic beauty, brilliant performance and restful comfort the Standard Eight Sedan is a most worthy member of a distinguished family of fine cars.

And it costs no more to own a distinguished Packard Standard Eight Sedan, factory-priced at $2485, than any other car of like size—no matter what the first cost. Operating expenses are no greater in the aggregate—and the difference in original price is completely offset by the longer period the Packard owner gladly keeps his car.

If you drive a lower-priced but Packard-sized car and turn it in every two years or so, you are missing the luxury and distinction of Packard transportation—and at no saving in expense. In other words, you are paying for a Packard. Why not own one?

ASK THE MAN WHO OWNS ONE



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Fortune

Number 5

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XUM

EVERY SPRING THE U. S. FLEET ASSEMBLES IN THE CARIBBEAN FOR SEA AND FOR AIR MANEUVERS. FROM THE DECK OF THE AIRCRAFT CARRIER *LEXINGTON* SWEEP UP SQUADRONS OF BOMBING PLANES TO ATTACK THE RIVAL FLEET BEYOND THE 33,000 YARD RANGE OF THE DREADNAUGHTS MOVING ON THE RIM OF A DESTROYER SMOKE SCREEN

The Power of the U. S. Fleet

Is relatively not so great as might be supposed, nor so expensive. Mr. Lodge figures American sea power is about half Great Britain's and the cost about 3 per cent of our governmental expenditures.

(A nation which could quite easily build the greatest and grandest Navy in the world and does not is something new in the world. Moreover, in public discussions this novelty overshadows the fact that the United States does have a Navy and reasons for a Navy. One who knows and likes the Navy is Henry Cabot Lodge, grandson of the late Senator from Massachusetts, a journalist already high in the counsels of that great Republican newspaper, the New York HERALD TRIBUNE. *To* FORTUNE, *Mr. Lodge contributes the following article, which is at once a simple and cogent presentation of the "realist" point of view.)*

IF THE broad justifications of the Navy are sufficiently obvious, it is certainly true that the degree of the Navy's importance at the present time is still only imperfectly understood. Many a reader of FORTUNE went to school at a time when the United States was, in the large sense, an agricultural country. We were taught that the United States fed itself and had an agricultural surplus which it sent abroad. Manufactures, of course, there were, but their production fell far short of domestic requirements and had to be supplemented by importations. That relationship is now reversed, for one of the disturbing as well as one of the stimulating facts about the United States is that it changes more rapidly in even its very fundamentals than does any other country of similar size.

So it is that if we were going to school today and were being properly taught, we would see that the United States is a country producing more than it consumes, but requiring constantly increasing imports of both crude materials and foodstuffs. We would learn that one-quarter of our essential raw material imports come from within a 1,000 mile radius of Singapore, which itself is 12,000 standard miles from New York, that the United States today imports more foodstuffs than it exports, that its food exports are little more than twice those of the British Isles, and that its total imports are more than four-fifths of its exports. The simple and wholesome traditions of our early republicanism are still so strong that many Americans do not realize the potency of their own country. They would undoubtedly find it hard to believe that the economic productivity of the United States about equals that of all the nations of Europe west of Russia or that of all other parts of the world lumped together. Having read schoolbooks wherein the primacy and might of Great Britain always loomed as a permanent and unshakable fact, they would be most interested to learn that the external trade of the United States is as world-wide and as great as that of any other single country and that our exports are greater than those of any one nation and may be said to support, directly or indirectly, one-tenth of our population.

In this connection the following figures on the trade of the United States and the United Kingdom are of paramount importance:

FOREIGN TRADE—1900

United States	*United Kingdom*
$2,224,000,000	$4,271,000,000

FOREIGN TRADE—1928

United States	*United Kingdom*
$9,220,000,000	$9,972,000,000

The United Kingdom figures include trade within the Empire, but the American figures do not include all of our sea-borne commerce which, of course, is as vital an element in our maritime problem as our purely foreign trade.

In a campaign speech in Boston, October 16, 1928, Herbert Hoover said:

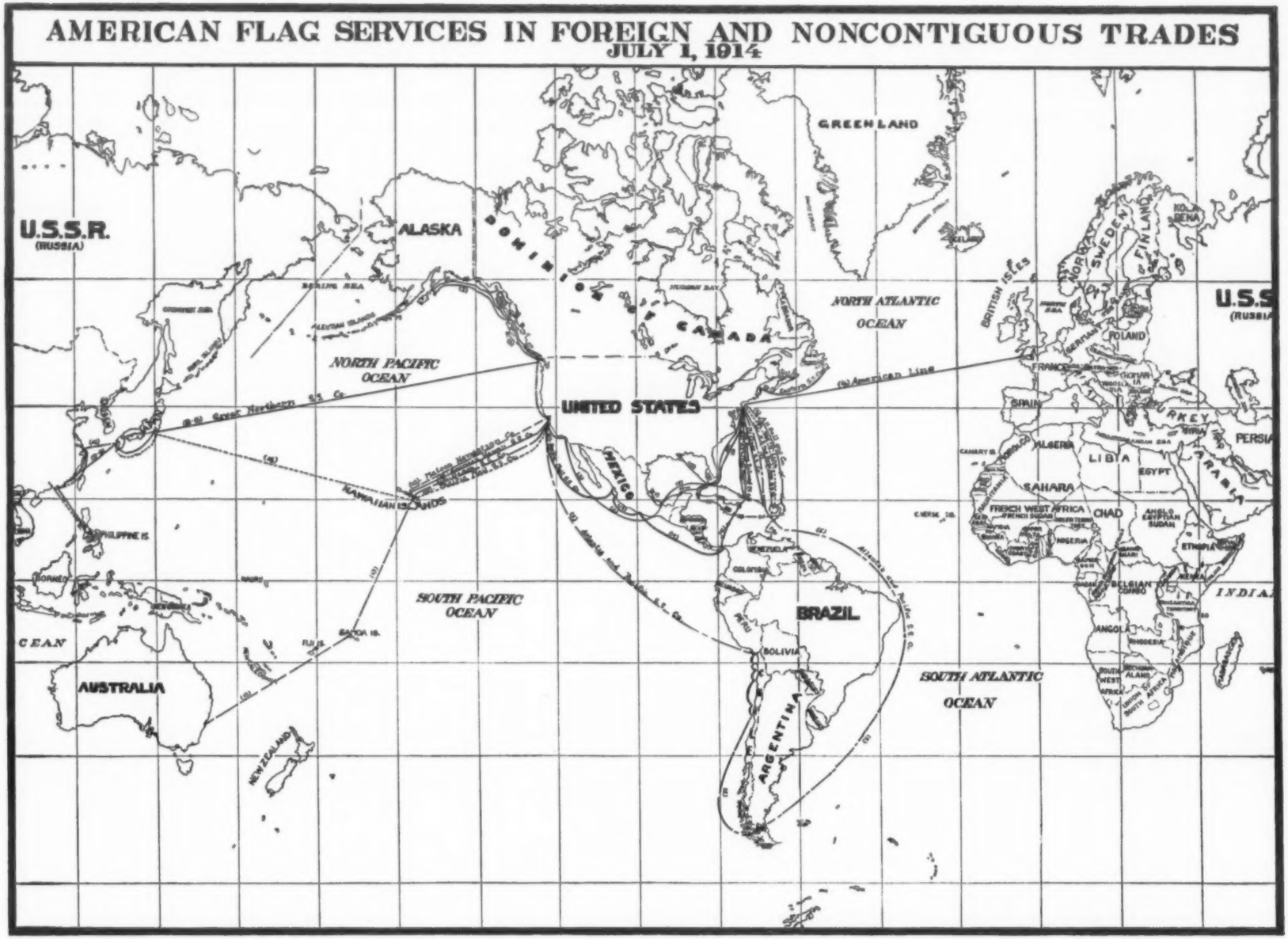
> We might survive as a nation, though on a lower living standard and wages, if we have to suppress the 9 or 10 per cent of our total production now sold abroad. But our whole standard of life would be paralyzed and much of the joy of living destroyed if we were denied sufficient imports . . .
>
> If this happens, we must stagnate and degenerate in civilization . . . We could not run an automobile, we could not operate a dynamo or use a telephone were we without imported raw materials from the tropics . . . Today we are the largest importers and the second largest exporters of goods in the world . . . Our total volume of export translates itself into employment for 2,400,000 families . . . And in addition to this, millions more families find employment in the manufacture of imported raw materials.

As has just been said, the true test of naval need is not only foreign trade but external trade, which in the case of the United States includes not only foreign trade but that with Alaska, Hawaii, and Porto Rico. In 1929 this United States external trade was $10,076,000,000. In the same year the external trade of the United Kingdom was $10,016,000,000. Deducting the inland trade of the United States proper with Canada and Mexico, our total external sea-borne trade amounts to about $8,500,000,000, to which should be added some $5,600,000,000 of coastwise and intercoastal trade, making our total sea-borne traffic approximately $14,100,000,000.

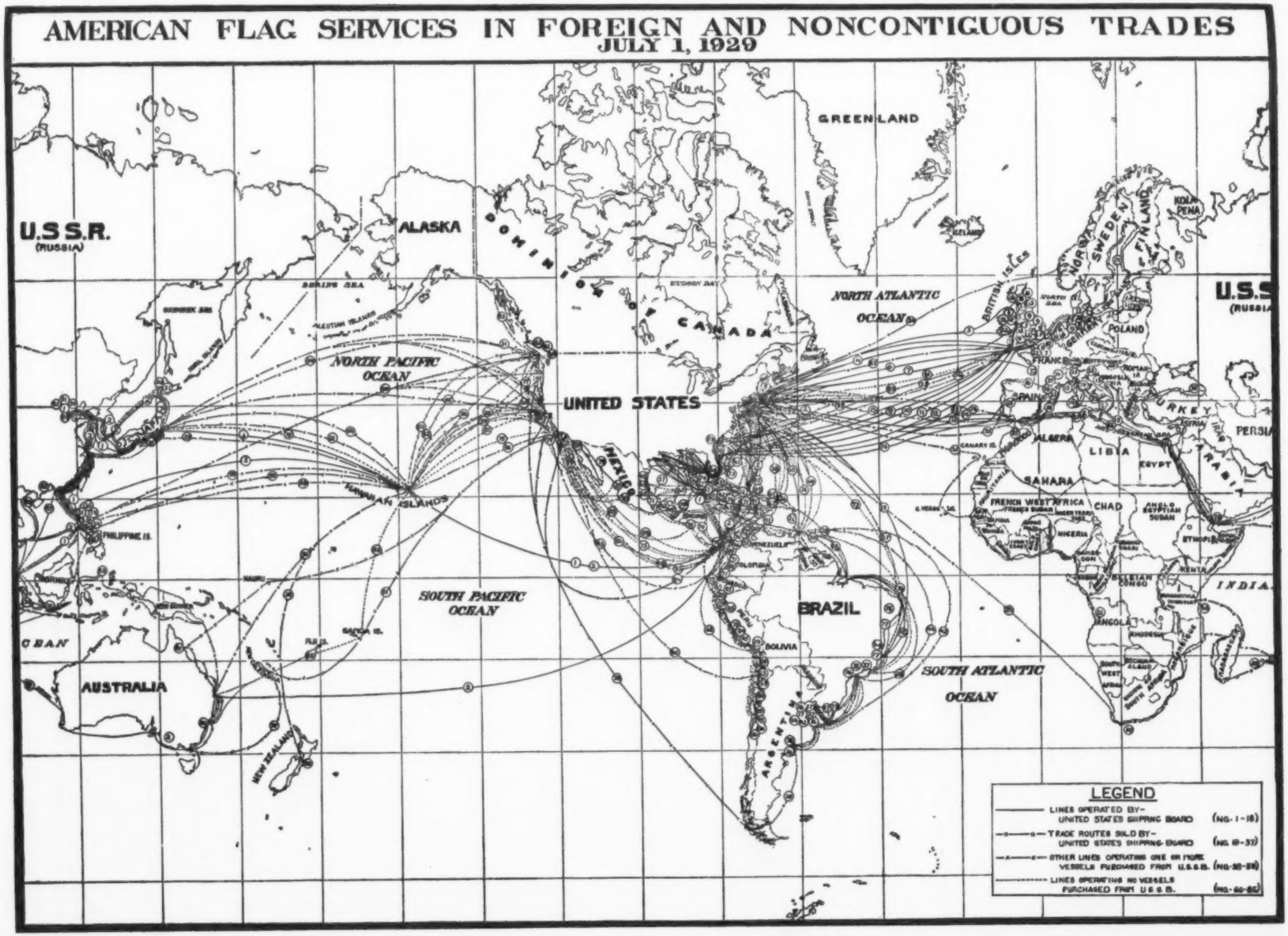
A Note on Clayton Knight's Frontispiece

NAVAL aviation, unlike Army aviation, is largely a product of post-War days. While the Army has amplified a technique already well established in 1918, the Navy has had to develop new material and new tactics to meet requirements for conjecting an aërial warfare at sea. It is all the more significant that to the Navy goes much credit for the development of the air-cooled engine and for the evolution of the most modern pursuit planes now standard for Army and Navy alike; that to the Navy goes a large measure, at least, of credit for the present use of metal construction and of radio communication in planes. Our big flying boats and seaplanes are a product of naval ingenuity in recent years, as are, too, the huge airships now being built. No large vessel in the 1930 Navy but has its quota of ships and fliers; no naval officer but is indoctrinated with the military theory of aviation. It is this phenomenal post-War development that Mr. Clayton Knight, himself a War-time flier with the R.A.F., records on the opposite page.

XUM



THESE charts represent the dramatic increase in the American merchant marine between 1914 and 1929; they cannot, of course, represent all the curious reversals in the tides of commerce in the last century. It is, for instance, of note that before the Civil War some 75 per cent of our trade sailed under the American flag, and equally significant that after the Civil War, with the development of Britain's coal and iron, our shipping lagged until, in 1910, it carried but 10 per cent of all American goods. Three things helped to spur our building again: the War, the



Panama Canal, and the realization of our own coal and iron resources. The artificial post-War peak of 1922 has also been disregarded: the second chart shows only the result of a fifteen-year swing which has now reached a point at which more than one-third of our commerce is carried in American ships. In figures, this proportion is expressed as follows:

Foreign ships	$5,187,931,000
U. S. ships	2,592,512,000
Overland	1,201,934,000
Parcel post	139,167,000

These are facts underlying our economic structure. Having conquered our continent, the United States is back again in the position it held in the 1830's and at the time of the Revolution, a position in which her future and her opportunity lay on the sea. Moreover the time may well be approaching when we may say of ourselves what Lord Fisher once said of Great Britain—that our frontiers are the coast lines of the enemy.

It is thus a safe guess that if the United States had been born fifty years ago when men's minds were intent on the development of the land, we should today have no fixed policies or traditions wherewith to guide the attitude of the government toward foreign trade. But because the sea at previous times in our history has been an indispensable channel of prosperity, we find ourselves today with naval traditions and policies sanctified by custom, most of which are well tested by time.

Where business is immediately concerned, the policies are three in number. First, the maintenance of the "open door" in foreign commerce so that Americans may trade on an equal footing with other foreigners abroad. This policy, repeatedly reasserted even in the last ten years, has saved China from dismemberment. Second, protection of American citizens abroad engaged in lawful business for the promotion of commerce. In support of the responsibilities entailed by this policy, we built the U. S. S. *Constitution* and her sister frigates, fought the French in 1798, the Barbary pirates intermittedly from 1801 to 1816, the British from 1812 to 1815, and the Germans in 1917, officially because of their interference with our rights on the seas.

The third major policy exists to prevent the establishment of European colonies or spheres of influence by European powers in the Western Hemisphere—in other words, the Monroe Doctrine. In this connection it is worth recalling that the late President Roosevelt had to tell the German Ambassador that if the Kaiser persisted in his actions toward Venezuela, he would order the American fleet into the Caribbean; and, as is well known, many of our temporary interventions in Central American affairs have been, incidentally, to prevent other powers from using intervention as a way to secure a foothold.

There are, besides, the essential policies of protecting the Panama Canal, our insular possessions, and Alaska, which, by themselves, would require a Navy of no small dimensions.

Although we take these policies for granted, it is obvious that if we were not able to maintain them, they would be speedily nullified. Where our maximum demand is for trade equality, that of most other nations is for trade privilege. Therefore the maintenance of the "open door" seems just as damaging to others as it seems fair to us. If other nations felt they could "get away with it," they would gladly create special preserves for themselves in those foreign markets which are becoming increasingly important to us. The same is true of protecting American citizens abroad. If it were thought that the American in foreign lands could be trifled with, he would be. And if a European nation concluded that it could establish a profitable dependency in the Americas, it is only natural to believe that it would do so.

Assume, for instance, that instead of our external trade having increased four and one-half fold while Great Britain's increase was merely two and one-half fold, each had increased three and one-half fold. The increment to Great Britain would have probably forestalled her unemployment problem and done much to solve her other economic stringencies—but not necessarily to the economic or political advantage

Courtesy House Committee on Naval Affairs

THE U. S. S. *CALIFORNIA*, PAINTED BY CHARLES ROBERT PATTERSON IN 1926 WHEN SHE WAS FLAGSHIP OF THE U. S. FLEET

of the United States. The fact is often that what is one man's meat is another man's poison and, in the case of so typically American a policy as the Monroe Doctrine, for instance, the visible force which prevents, say, a European state from establishing a foreign dependency in the Americas is not the Peruvian Navy or the Argentine Army, but the Navy of the United States, backed up by the will of the American people.

War—its risk

To understand the risks of war, we must first understand ourselves. We must realize that we are a trading nation and a gain-loving nation. These two qualities are in harmony with each other. But we are also a peaceful nation. This is, to be sure, due to the subconscious personal inclination of Americans, but it can also be attributed to the fact that the maintenance of the *status quo* is beyond even the slightest doubt to our immense advantage. If we were in the position of Germany, for instance, and had a strip of foreign territory separating New England and the Middle Atlantic States from the rest of the country, or if we were, like Austria, an impossible economic unit, we might feel differently about the regime of things as they are. We are, however, satisfied with the world as it is, and with good reason. We should not, however, make the common mistake of assuming that because we feel a certain way, others must feel that way too. We have nothing to gain by a war, but others may think that they have.

Broadly speaking, the ways in which the Navy might have to enter actual combat fall under two heads: first, with regard to weak nations; second, with regard to strong ones.

Besides the Caribbean countries, we must occasionally intervene in the East. Marines and bluejackets represent the Navy in China today. It is enough to say that during the past 115 years of our existence, the armed forces of the United States have been landed on foreign soil for the protection of the lives and property of American citizens more than one hundred times. Without a declaration of war, bluejackets and marines have gone ashore from the Ægean Islands to Manchuria and from Mexico to the Falkland Islands.

The chances of trouble where stronger nations are concerned cannot be stated categorically, however real they may be. Our international prowess, however, must make it sufficiently obvious that Mr. William Howard Gardiner was right in applying the term "Insular America" to the United States and in showing that we are in effect a vast mid-oceanic island and not a self-sufficient continent—that we, in short, occupy a central maritime position and have a population which, for the maintenance of its standard of living, will increasingly require the wealth that is drawn from the sea.

Moreover, history shows that the new and rising nation, whether it be the United States today or the Kingdom of Prussia under Frederick the Great, only rises at the expense of others and consequently only after the others have failed in keeping her down. So it is that Sir Esme Howard, the last British Ambassador to the United States, could say a few years ago: "The only possible source of trouble that I can see in the future might arise out of economic competition; it seems to me that the struggle for markets will be more acute and violent than in the past."

It is not only because we are growing in an economic sense that we tread on other people's toes. Our trade prowess is an individual rather than a national matter and the "man on the street" is probably not keenly aware of it. There are, however, such deliberate and conscious policies as our immigration act and our protective tariffs, both of which are extremely irritating to foreign nations and both of which are approved by the majority of Americans.

Moreover, we do not intend to draw in our horns, reduce our trade, and abandon the policies which are the foundation of our well-being. And in all truth must it be said that as far as the eye can see, no single foreign power is going to try to force us to do so at the present time. A combination of powers, however, is not inconceivable and is historically on the cards. The nations banded together unsuccessfully against Frederick the Great, successfully against Napoleon, and successfully against Imperial Germany. I do not mean by this that we now do or ever shall resemble any of these countries, but it is not at all inconceivable that others might think of us in just such terms. The correctness of a certain view is sometimes not as important as

Courtesy House Committee on Naval Affairs

A CONVOY OF U. S. DESTROYERS ESCORTING A MERCHANT SHIP, BY LIEUTENANT COMMANDER H. REUTERDAHL

the vigor with which it is held. As Mr. Owen D. Young recently observed, "America is too rich to be loved. She is well enough off to be envied."

What is an adequate Navy?

The French, with characteristic logic, speak of the "absolute naval needs" of a nation as though the nation were floating in space removed from any neighbors. In such an enviable position there would be no need for a Navy since there would be no trouble-makers. Naval needs are relative and depend in large part on the risks of war entailed by the policies of other powers.

A glance at the United States makes it difficult indeed for anyone to prove that our naval establishment is too big. We are flanked by two huge oceans on either of which we might have to exert our maximum naval effort. The rapid transfer of the fleet from one coast to the other depends on the Panama Canal, which is probably the most vulnerable place in the world. If we wanted to be perfectly consistent, we would require a Navy on each coast.

But this theoretical maximum has not been the American policy. Instead we have adopted the policy of equality with the strongest—and the strongest navy today is the British Navy. Historically speaking, this is far from an extreme policy. Great Britain in the past acted on the theory of having her Navy stronger than those of all the other navies of the world lumped together, which theory in more recent times became the two-power standard. Our policy of equality with the strongest is, of course, a very great guarantee of security, although it obviously would not be adequate for a war in which we were attacked by several naval powers. It cannot, by any fair standard, be called anything but moderate.

The policy of equality, or parity as it is usually called, has, however, been decided on and was agreed to by Prime Minister MacDonald, who told the United States Senate that as far as Great Britain was concerned we could have parity "heaped up and flowing over." It is therefore pertinent to inquire whether parity, having been agreed to in theory, exists in fact. If this question is to be answered correctly, it must be first realized that sea power, in the established use of the term, does not consist of the fleet alone. Entering into it are two other factors of equal, if not greater, importance. These other two factors are naval bases and the merchant marine, and in both these factors we are vastly inferior to the British.

When Messrs. Hoover and MacDonald speak of Anglo-American parity, therefore, they refer only to fleet parity and not to parity in the fundamental elements of sea power. Fleet parity we shall probably obtain, although we have not got it now, for in January, 1930, the modern vessels of the two fleets stood as follows:

	United States		British Empire	
Class	*Number*	*Tons*	*Number*	*Tons*
Capital ships	18	523,400	20	606,450
Aircraft carriers	3	76,286	5	92,850
Cruisers	11	80,500	54	327,111
Destroyers	223	226,313	150	157,585
Submarines	76	59,738	53	47,421
Total	331	966,237	282	1,231,417

This table does not include ships building, appropriated for, or authorized. The capital ships are determined by the Washington Treaty and so are not subject to change. Moreover, we have cruisers under construction, authorized, and appropriated for which would bring us much closer to the British strength in that category. Our large quantity of destroyers may be attributed to the late War when the American fleet acted jointly with the British, and destroyers were essential to protect convoys from submarine attack. These destroyers would be relatively useless to us if we were engaged in a war by ourselves. At the present time large quantities of them are laid up in port.

Big battleships and cruisers are preëminently to our advantage for strategic as well as economic reasons, since a battleship or a long range cruiser can go farther without refueling than can any other type of naval vessel. If we had naval bases all over the world as Great Britain has, this requirement would not arise and small cruisers would do the trick. But we have a trade which extends everywhere, and we must therefore have ships which can go everywhere. Now, naval warfare usually takes one of two forms —either the two fleets meet with their complete complement of battleships, cruisers, destroyers, etc. and hammer away until a decision has been reached, or else dispersed warfare is undertaken against the enemy's commerce. This consists in cruisers wandering around the Seven Seas, capturing or sinking enemy vessels. If a nation has naval bases, these cruisers need not devote a large part of their space to the carriage of fuel and supplies, but if a nation, like the United States, has very few bases, ships must be made large enough to stay at sea for long periods. So it was that before the Washington treaty the United States built several cruisers of about 14,000 tons. But at the Washington conference the limit for cruisers was set at 10,000 tons. Therefore any further reduction from that figure would certainly be to our disadvantage.

Let us assume for purposes of illustration that the United States and Great Britain each wish to maintain two cruisers at the following four stations: Gibraltar, the Cape of Good Hope, Singapore, and Panama. As the preceding quotation has shown, this would take more than eight cruisers each because ships would have to leave the station for refueling and repairs. The advantage accruing to the power with bases over the power without them may be expressed in the following table:

British Cruisers

	On station	*Absent from station*	*Total*
Gibraltar	2	1	3
Cape	2	1	3
Singapore	2	1	3
Panama	2	3	5
Total	8	6	14

American Cruisers

	On station	*Absent from station*	*Total*
Gibraltar	2	3	5
Cape	2	6	8
Singapore	2	2	4
Panama	2	1	3
Total	8	12	20

On such a basis, therefore, twenty American cruisers are the equal of merely fourteen British cruisers. This may perhaps show how difficult a matter it is to determine what parity really is.

Where outlying naval bases are concerned, the United States has seven to the British twenty-six. It is interesting to note that the British have four bases in western Atlantic waters whereas we have none in eastern Atlantic waters. Our outlying bases are either in the Caribbean or in the Far East. In middle and near eastern waters or in the vicinity of Europe or Africa, we have none at all. The question of acquiring more bases has not been considered enough from a strategic standpoint to make a definite opinion possible. From a commercial standpoint, however, there is already something to be said for it. As the accompanying chart shows, we are becoming more and more independent of foreign bottoms for the carriage of our foreign trade. We have, fortunately, learned that lesson from the World War when our utter dependence on foreign ships was so large a factor in bringing us in. This increasing American merchant marine going into every corner of the globe would undoubtedly profit by having ports of call here and there under the American flag. Human nature being what it is, it is only natural for American ships to get treatment in foreign ports inferior to that received by citizens of the country to which the port belongs. Delays and discrimination are bound to occur, and these cost money.

The third item of sea power is the merchant marine, and here our inferiority to the British is also pronounced. This explains why fleet equality with the strongest does not mean sea power equality with it. Public attention centers on the fleets because war vessels are specially constructed by the government for a special purpose. Where general warfare is concerned they are, however, only a small part of the total. Nearly everything that a nation needs in time of peace is a source of strength in time of war. Food and clothes are indispensable in war, and it was largely because the British and American navies stopped the Germans from getting food that they gave in. Pushing the subject a little further, automobiles and airplanes would be invaluable in time of war, yet no one talks of limiting them because their use in time of peace is so much more obvious to most persons than that of the Navy.

Merchant vessels are in this class—valuable for war but not subject to limitation because of their usefulness in time of peace. But if all navies were abolished, the naval importance of merchant ships, especially when armed, would at once be apparent to everyone. So it is that the more navies are reduced, the more importance attaches to the merchant marine. In the War of the Revolution we had practically no Navy but we had many naval actions fought with commercial vessels.

The research division of the United States Shipping Board shows that Great Britain's ocean-going merchant tonnage is nearly twice that of the United States. Discouraging as this may seem, it is a great deal better than it used to be and should improve still more if Americans take the lessons of recent history to heart.

It is interesting to note that in 1830, 89 per cent of our foreign trade was carried in American ships. This fell to 8.7 per cent in 1910 and stood in 1928 at 33.3. Our total number of merchant ships as of January 1, 1930, was 1,695, aggregating 9,526,108 tons as compared with 3,034 British ships aggregating 18,057,236 tons.

Merchant vessels which would be useful in time of war should have an individual gross tonnage of 4,000 tons or over, with a speed of 15 knots. This type might be utilized as cruisers or armed transports. Of this class of ships the United States has 83, with an aggregate tonnage of 884,064, and Great Britain 245, with an aggregate tonnage of 3,170,603. Britain thus has a superiority in convertible merchant vessels of about 3 to 1.

In making these constant comparisons between the United States and Great Britain nothing invidious is intended, for it is my conviction that relations between the two great powers have never been as good as they are today. They are made because the two governments have agreed on parity, and parity with the strongest is today the naval policy of the United States. The foregoing, therefore, seems to show that while our two fleets may ultimately be in the ratio of 10 to 10, where naval bases are concerned the ratio is 2.6 to 10 and where merchant marine is concerned the ratio is 3.3 to 10. Instead of having parity in sea power, the average relationship of all three factors, figured on an equal basis, makes the ratio one of 5.3 to 10. Such is the true picture of things as they are—on the assumption that our naval fleets are equal which, as shown above, they are not. (For a curious note in public opinion, see page 146.)

The cost of the Navy

The question of what a certain governmental activity actually costs is nearly impossible to determine, and the difficulties of doing so with regard to the Navy are well exemplified by the current discussions on how much "we spend for war"—a broad and nearly meaningless phrase. A favorite way of estimating this is to take the total annual expenditures of the federal government and then to add up the service on the national debt, the sums paid for pensions of past wars and the current War, and Navy Department appropriations. These are then called "expenses for war" and amount to about 72 per cent of the federal total. From this it is an easy, if inaccurate, step to the saying: "Americans spend 72 per cent of their governmental income for war."

The question of what the Navy costs should be discussed on a rational rather than on an emotional basis. To begin with, the United States is a federal republic and not a centralized state like France or Great Britain. In those countries the expenses emanating from London or Paris give a fair idea of the total governmental expenses of the nation. The federal figures by no means give an accurate idea of the total governmental expenses of the United States. Our state and local governments, in the aggregate, spend about twice as much as our federal government does.

The latest reliable figures available on the cost of government in the United States are those of the National Industrial Conference Board, Inc., for 1927. The following table shows our federal, state, and local expenditures for 1913 in 1913 dollars and for 1927 in 1927 dollars:

	1913	*1927*	*Increase*	*Percentage increase*
Federal	$ 692,000,000	$4,069,000,000	$3,377,000,000	488
State	383,000,000	1,656,000,000	1,273,000,000	332
Local	1,844,000,000	6,454,000,000	4,610,000,000	250
	$2,919,000,000	$12,179,000,000	$9,260,000,000	317

This somewhat appalling increase in the cost of government is lessened by the fact that the 1927 dollar is worth only a fraction of the 1913 dollar. Using the wholesale price index for 1927 which, according to the Bureau of Statistics of the Department of Labor, is 146.8, the total expenditures for the years 1913 to 1927, in 1927 dollars, are as follows:

	1913	*1927*	*Increase*	*Percentage increase*
Federal	$1,016,000,000	$4,069,000,000	$3,053,000,000	300
State	562,000,000	1,656,000,000	1,094,000,000	195
Local	2,706,000,000	6,454,000,000	3,748,000,000	139
	$4,284,000,000	$12,179,000,000	$7,895,000,000	184

SEA TRADE STATISTICS

COMMODITIES OF PEACE

A large industrial nation without free and guarded access to the sea is an organism without space to breathe in. That America is a great exporting country is a truism; that it is also a great importing country is less generally and completely realized. Our imports in 1929 exceeded the four billion mark for the fifth consecutive year; their total value was 7½ per cent higher than in 1928, in spite of the drop in price of nine leading commodities (coffee, sugar, rubber, hides and skins, newsprint paper, crude petroleum, coconut oil, copra, and tin). Record-breaking imports included silk (87,000,000 pounds), crude rubber (1,263,000,000 pounds), newsprint paper (4,845,000,000 pounds), cane sugar (9,770,000,000 pounds), and tin bars and blocks (195,165,000,000 pounds). Follows a table of import and export values for 1929:

Imports		Exports	
Raw silk	$432,340,000	Cotton, unmanufactured	$770,830,000
Coffee	302,397,000	Automobiles, other vehicles	588,023,000
Rubber	247,421,000	Petroleum	561,178,000
Sugar	229,663,000	Grains and preparations	286,354,000
Paper, newsprint	163,184,000	Industrial machinery	277,754,000
Petroleum and products	143,545,000	Tobacco manufactures	165,625,000
Hides, skins	137,281,000	Agricultural machinery	140,801,000
Furs and manufactures	122,529,000	Fruits, nuts	137,467,000
Paper base stocks	118,133,000	Electrical machinery	121,365,000
Copper	104,306,000	Animal oils and fats	117,714,000
Jute and manufactures	95,989,000	Cotton, manufactured	111,216,000
Tin	91,839,000	Sawmill products	110,628,000
Vegetable oils, inedible	91,819,000	Coal and related products	106,151,000
Wool, unmanufactured	87,344,000	Iron and steel manufactures	104,148,000
Fruits and nuts	86,648,000	Steel mill products	96,046,000
Art works	82,106,000	Iron and steel, advanced manufactures	87,003,000
Precious stones, pearls and imitations	79,650,000	Rubber manufactures	76,963,000
Oilseeds	79,335,000	Office appliances	53,754,000
Fertilizers	72,340,000	Leather	42,947,000
Wool manufactures	64,869,000	Wood manufactures	40,934,000
Cotton manufactures	63,454,000	Furs and manufactures	39,504,000
Tobacco and manufactures	60,618,000	Paper manufactures	37,380,000
Sawmill products	54,159,000	Fodders and feeds	32,715,000
Cotton, unmanufactured	53,333,000	Photographic goods	31,566,000
Flax, hemp, etc.	50,890,000	Naval stores, gums, etc.	30,998,000
Vegetables & preparations	47,797,000		
Leather	44,559,000		

COMMODITIES OF WAR

Better able to support ourselves than France or England, we are far from self-sufficient in peace or war. FORTUNE prints, for the first time, an official tabulation of war-time necessities together with the countries of their origin.

Trade Region	Percentage of U.S. Supply from This Region	Military Use
Asia, East Indies		
Antimony	67	Munitions, bearings
Camphor	96	Aircraft, medicinal uses
Jute	86	Sandbags, food containers
Manila fiber	100	Cordage, rigging, ropes
Rubber	85	Tires, gas masks, boots, etc.
Shellac	86	Varnish for fuses, electrical devices
Silk	90	Cartridge bags, parachutes
Tin	66	Food containers, bearings etc.
Manganese	14	Steel, chemicals, batteries
Europe		
Manganese	30	Steel, chemicals, batteries
Nickel	85	Gun steel, armor plate, ammunition
Quicksilver	51	Fulminate, paint, batteries, medicine
Quinine	81	Medicinal uses
Caribbean		
Coconut shells	92	Absorbent for gas masks
Sugar	61	Food
Sisal	74	Ropes
East Coast of South America		
Manganese	22.5	Steel, chemicals, batteries
Coffee	72	Food, stimulant
West Coast of South America		
Nitrates	40	Explosives, chemicals
Iodine	76	Medicinal uses

The percentage increase is thus something less than half of what it appeared to be before allowance was made for the purchasing power of the dollar. So it is that during a period when the population of the United States increased from 96,512,407 to 118,620,000, or 23 per cent, the total costs of government increased by 184 per cent. Where the cost of government had been $44.39 per capita in 1913, it had increased to $102.69 in 1927.

Out of a grand total, therefore, of more than $12,000,000,000, the total military expenditures were $600,000,000, or about 5 per cent. Compare it with the largest governmental expenditures listed here in the order of their size, as given by the National Industrial Conference Board:

Public education	$2,344,000,000
Highways	1,708,000,000
Social welfare	1,108,000,000
Cost of general government	866,000,000
Public services (including postal deficit)	617,000,000

Then compare the increase of some $220,000,000 in our military expenditures with the increase in our governmental expenditures for other purposes of $7,895,000,000. The other expenses have increased thirty-five times as much. Where the general cost of government has gone up 184 per cent, that of our national defense has increased 59 per cent. Putting it in another way, while our military expenditures increased $1.16 per head—and of this only 74 cents per head is for naval expenses—our other expenses increased $62.12 per head. Surely a people whose national wealth is close to $400,000,000,000 and who spend over $12,000,000,000 on its government as a whole need not be overexercised by this comparatively slight increase in the means of self-protection. And surely those who talk of "the crushing burden of naval armament" cannot be talking of the United States—or they have not taken the trouble to look up the facts, for the facts show that naval armaments cost less than 3 per cent of our non-military governmental expenditures.

There is one more consideration with regard to the cost of the Navy which should be mentioned. When expenses "on account of war" are mentioned, it is the custom among certain persons to include the national debt and the pension for veterans of past wars. But does this give a true picture? Of course the pensions would not be paid if the war had not been fought, but it is equally true that they would not be paid at all if the war had been lost and the nation had been either ruined or destroyed. The statisticians can total up the cost of the Civil War as high as they like, but it is safe to say that no total they can reach will look very big when compared with the value of the existence of the United States. The War of the Revolution may have been frightfully expensive, but most Americans will incline to the view that it was on the whole a profitable proposition.

The late War afforded an apt lesson of how expensive it sometimes is to be without an adequate Navy. The cost of the War to the United States is usually estimated at $25,000,000,000. Yet in the words of Colonel Edward M. House, who had probably a closer contact with the underlying facts of the War than any other American, "Given a large and efficient Army and Navy the United States would have become the arbiter of peace and probably without the loss of a single life." Experience eventually converted so pronounced a pacifist as the late President Wilson to the value of a Navy as a peace preservative, somewhat as in the past Thomas Jefferson had also become converted.

In both the small and the large sense, the United States Navy is the protector of American business. Its gunboats on the Yangtze protect the ships of an American oil company, its cruisers off the Shanghai bund mean that American citizens can trade and live peacefully far from home, and its marines in the Caribbean guarantee to the fruit grower and trader as great a degree of justice as natural conditions allow. The presence of an American Navy is assurance to the millions of Americans dependent in one way or another on the automotive business that they will have rubber tires. It insures at a remarkably cheap rate a foreign trade of nearly $10,000,000,000 and overseas interests of some $50,000,000,000—which, by the way, is more than the whole country was worth fifty years ago. Finally, it is the best method yet devised for protecting American civilization, the United States of America, and all the vast, imponderable things which are thus entailed.

Courtesy of E. I. du Pont & Co., Inc. & Naval Historical Foundation

THE SIXTH BATTLE SQUADRON, PART OF THE GRAND FLEET, LEAVING THE FIRTH OF FORTH, BY BURNELL POOLE

Capital Ships

BATTLESHIP design as a fine art came to a sorrowful conclusion in 1921 when the Washington Arms Treaty imposed limitation of capital ships upon the five primary naval powers of the world. Barred from practicing their profession in its rarest form, architects of the United States Navy produced plans for standardized 10,000-ton cruisers, into which they could inject about as much inspiration and individuality as into a Ford car. They watched the terrific dreams they had incorporated into a new type of gigantic battle cruiser junked to produce the grotesque graceless aircraft carriers *Lexington* and *Saratoga*.

The Washington Treaty left the United States Navy with eighteen capital ships, a battle brood spawned as twins and triplets over a dozen years. This first line fleet is today obsolete in the absolute, would be obsolete, in fact, if battleship design had been permitted to go forward unchecked at the same rate of speed as before 1921. If these eighteen ships steamed out to a set sea battle tomorrow, they would fight under technical conditions approximating those of the last War—a sort of *Merrimac* and *Monitor* encounter transposed into the Spanish War. But no handicap would be involved in such an engagement, because the U. S. capital fleet is, relatively, as effectively modern as any adversary.

The oldest ships of the U. S. fighting line were not new when they led the Atlantic Fleet to Vera Cruz in 1914. The youngest have never heard a war-time shot. In the twelve years between, the Navy made major technical advances. Nine thousand more tons were put into each ship. Overall length was stretched 100 feet. Gun calibres were increased four inches; armor plate was thickened by five inches. The bow cut was reversed. Secondary gun recesses were smoothed out of the hulls. The cage mast ceased to be an experiment, and fire control tops grew steadily heavier. Only in capital ship speed did the Navy fail to make any appreciable advance. Today, as in 1911, twenty-one knots remains about the maximum average.

Biggest, newest, best of U. S. dreadnaughts are the *West Virginia*, *Colorado*, and *Maryland* (average age: eight years). They alone carry sixteen-inch guns, set in pairs in four turrets, which can toss a broadside 33,000 yards. Their bows are whittled away like a racing yacht's; their sterns are almost flush with the water. On them electricity does everything from driving their four great screws to operating the mess potato peeler and ice cream freezer. They are readily distinguishable from older classes by their two small insignificant funnels and their cage (mesh) masts, the forward one growing out of a massed pile of bridges, and both surmounted by heavy fire-control tops.

The other U. S. capital ships are the *California* and *Tennessee* (nine years old), the *New Mexico*, *Idaho*, and *Mississippi* (twelve years old), the *Pennsylvania* and *Arizona* (fourteen years old), the *Oklahoma* and *Nevada* (fourteen years old), the *New York* and *Texas* (sixteen years old), the *Arkansas* and *Wyoming* (eighteen years old), the *Florida* and *Utah* (nineteen years old). With the *California* the Navy first changed from one to two funnels on battleships, with the *New Mexico* from the cut-back to the yacht bow. Under the London Treaty the *Florida* and *Utah* would probably be scrapped as the oldest ships of the line, thus reducing the U. S. fleet to sixteen battleships.

Courtesy of the United States Naval Academy

THE ARRIVAL OF THE U. S. FLEET AT SCAPA FLOW, CHIEF BRITISH NAVAL BASE, IN DECEMBER, 1917, BY BERNARD F. GRIBBLE

Rufus Lenoir Patterson's Cigar Machine

After $8,000,000 and twenty years' "grief," the impossible is accomplished. George Washington Hill turns the Pariah into a Virgin. And Cuba revolts.

THE son and heir of William the Conqueror was named Rufus. Why? Because he had red hair. From his father, the founder of the British Empire, he inherited England and was mysteriously shot and killed by an arrow while hunting in New Forest. That was the year 1100, and since that time, which was nearly a thousand years ago, few children ever born Rufus were destined greatly to affect the ways of men, until some fifty odd years ago an aristocratic but somewhat impoverished North Carolina lawyer-planter named his seventh son Rufus after himself—Rufus Lenoir Patterson. Why? Well, in this case, the child did not have red hair but since he was seventh it seemed fitting to give him his father's full name, and if the relation between hair and name had to be established this child did so by having black hair and the middle name of Lenoir, which in French means black.

In each of the years 1910, 1922, and 1929, about 6,500,000,000 cigars were made in the United States (actually 6,810,098,416 in 1910 and a lesser number, 6,425,485,322, in 1927). But while there was little change in the number made, the people who made them were:

1910	22,519 cigar factories
1922	11,576 cigar factories
1929	(circa) 6,000 cigar factories

Why? Because at a cost of $8,000,000 and twenty years' unimaginable "grief," Rufus Lenoir Patterson had made a machine.

Last year, George Washington Hill instituted his notorious "Spit" campaign for five-cent cigars. Why? Because of his own bold belief that at last the time had come when the ancient prejudice against cigars made otherwise than by hand could be demolished. But, also, because Rufus Lenoir Patterson and his staff of engineers had made a machine.

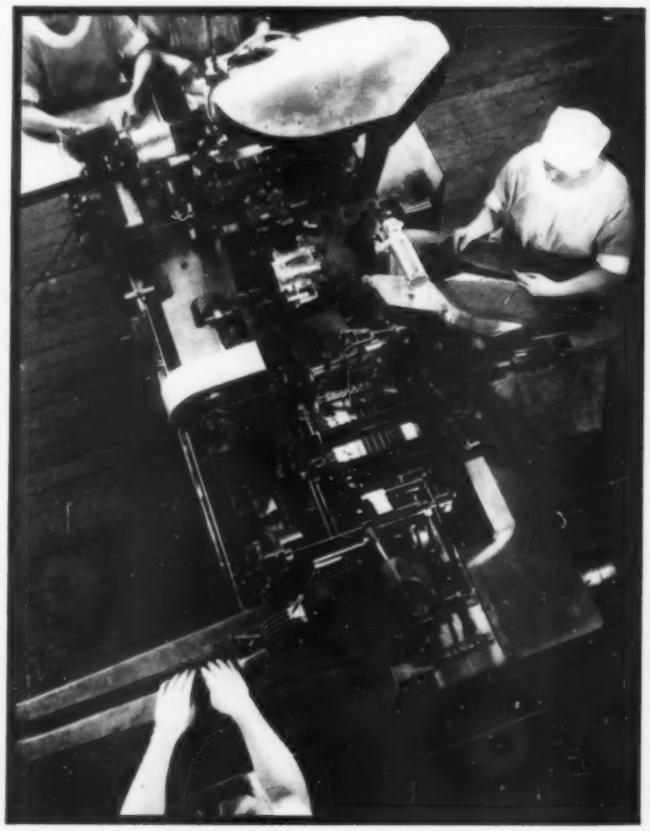
Not only is the machine itself a curiosity of the first magnitude, but also its results recapitulate the whole history of recent economics.

First, as to the machine itself.

In 1898, there was a man named James B. Duke, one of the half-dozen greatest giants of the era. He had already been in existence long enough to rise from absolute destitution to practical monopoly of American smoking. While he no longer exists, his home at the corner of Seventy-eighth Street remains the most perfect on Fifth Avenue and his only daughter, Doris, is the richest girl of eighteen in the world.

To this man Duke there came in 1898 the aforementioned black-haired Rufus Lenoir. Rufus Lenoir Patterson was looking for an industry which was looking for him. And Mr. Patterson had in his figurative sleeve two machines, each of which was of value to the industry owned by Mr. Duke. Mr. Duke virtually owned tobacco. He owned the rights of the cigarette machine, and all cigarettes manufactured in the United States were produced by the machines he controlled. Mr. Duke also owned tobacco fields, manufactured his own cigarettes, and, for the sake of those who preferred to roll their own, a tobacco called Duke's Mixture.

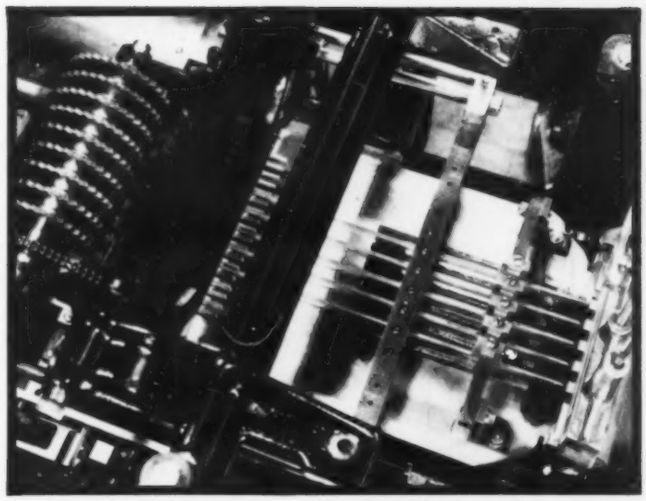
Now one of the machines in Mr. Patterson's sleeve was a machine then and now admirably and economically planned to manufacture just such tobacco bags as the makers of Duke's Mixture used to package their tobaccos. Invented by a William H. Kerr whose London representative Mr. Patterson was for two years (during which time he took courses in machine design), the machine had been improved by Mr. Patterson and remains today one of his outstanding favorites. The other machine automatically weighed, packed, stamped, labeled smoking tobacco. What Mr. Patterson and Mr. Duke said to each other that day in 1898 is not a matter of record but it is said that Mr. Duke ended the conversation with ". . . Ding it, your machines are all right, but I also must have

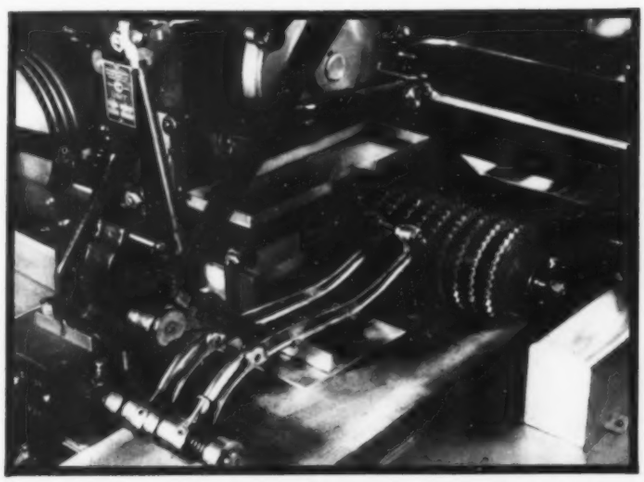


1.—This is an entire cigar-making machine. On pages 57, 60, and 61, FORTUNE attempts to describe its functioning so that anyone can understand it. For identification we pretend that the hands shown at the bottom of the picture belong to Libby Lou. At the right is Annabelle. Of the two girls at the top, the one at the right is Jane. This and the following photographs were taken for FORTUNE by Mr. Arthur Gerlach.

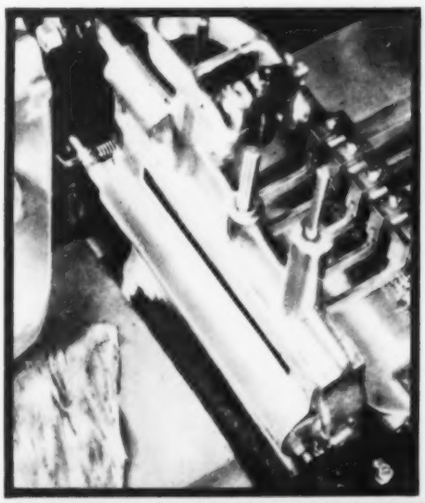
2.—This is Libby Lou putting tobacco leaves into a trough. The leaves then move under the wheel and are pressed into a more or less compact bunch and cut by a knife into lengths approximately equal to the cigar length.

5.—Here you see the toothed wheel from the top. Right in front of this wheel are little steel fingers (which here you cannot see) that keep the fillers from moving forward until one filler is big enough to force the fingers back. Then that filler moves on and another takes its place. Thus the thickness and actually the weight of each filler is practically standardized. The bar in the center conceals a knife which cuts the filler to exact cigar width. After this, each filler (you can see two of them, center and right) is ready to be the insides of a cigar. (Before any tobacco leaves are given to cigar machines they are cut in the middle by a machine [not shown anywhere on these pages] which removes the stem and divides the leaf into a right hand half and a left hand half. The right hand half is the reverse of the left hand, and it was discovered that the same machine could not handle both. Two machines were therefore evolved, one the reverse of the other, the one for left hand halves, the other for right hand.)





3.—After they have been somewhat pressed and cut (notice Libby Lou's wheel in upper left of photograph), they emerge on a tray . . .



6.—Then the filler drops into a little loop formed by a small rubber belt, about which more hereafter.

4.— . . . which drops down and a little pusher pushes the bunches (cigar men call them fillers, and they are the insides of a cigar) under another wheel here shown with teeth. Each tobacco leaf differs from every other tobacco leaf in shape and texture. One of the triumphs of the cigar machine is its ability to deal competently with a completely unstandardized raw material.

7.—Here is Annabelle and her machine. She puts a large (and better quality) leaf of tobacco on the surface, which looks something like a flatiron.

you." Mr. Duke certainly did say "ding it," for it was Mr. Duke's favorite expression and he hated and never indulged in swearing. Thus it happened that Mr. Duke got the machines and the inventor and improver thereof and shortly thereafter, at twenty-seven, Mr. Patterson became vice president of the American Tobacco Company.

The Duke-Patterson relations were curious. There was the day, for example, when the hard-working, long-houred Mr. Duke became so exasperated with his young engineer's late arrivals at the office that he could no longer contain himself. To the carpet he summoned him and said: "Rufus, I'll not stand for it! You've got to get down to work every day at nine."

"I am sorry, Mr. Duke, but it is quite impossible for me to promise that."

And that, repeated about twice a year, was the only dissent ever recorded in the annals of the Duke autocracy.

Then, of course, there was that other day when Mr. Duke said: "Rufus, four things have always been essential to the tobacco business. So, so, and so . . . and a cigar machine. Let's have it."

There is a quality about Mr. Patterson today rarely found in the great American business man. It is the comic spirit which gives to civilized creatures a capacity for enjoyment of life, including their own antics. In his paneled office, quietly high above Fifth Avenue, not even Time is taken too seriously. If Mr. Patterson is unapproachable, it is simply because he refuses to be bored. Those who do not bore him may stay as long as good conversation lasts. He will not even be bored on the subject of his own business. But recently it pleased him to discuss it and of the cigar machine, this is what he said (a remark which probably cannot be paralleled in the entire bibliography of American business), "If," said he, "if I had had the least idea of the trouble that machine would cost, it would never have been made."

The difficulties are obvious enough. That they should be overcome without undue trouble testifies to contemporary faith in the mechanical perfectibility of anything. Logically the cigar machine is impossible. A fabricating machine presupposes standardized raw material. You cannot put tree stumps or even pulp in at one end of a printing press and expect to get a newspaper at the other. You must put in the standardized paper. So with the cigarette machine. For it, tobacco is chopped up so fine that for practical purposes it is standardized raw material. But the cigar must be made with a filler, consisting of big pieces of tobacco of millions of different shapes and sizes, enclosed in a binder, which must be all one piece (and no two pieces are alike), enclosed again in a wrapper, also one big piece, just as God made it, and the sun dried it. Nature never made two tobacco leaves exactly alike in form, size, thickness, pliability, strength, texture, hygroscopicity, all of which attributes play an important part in the manufacture of cigars. Furthermore, Nature did not make the climate in the northern countries like the climate in the subtropics, and the machine must operate anywhere.

However, the years pass, and it is 1919. The War is over and war-fed Labor is rambunctious. In Boston Waitt & Bond, who make Blackstone cigars, are told by the (then) potent Cigarmakers' Union that wages must again be raised or—there'll be a strike. Thereupon President Waterman buys some land in Newark, New Jersey, builds a small factory, installs four machines although he is told they are still imperfect. He makes a test: good enough. The Union can go to the devil; the Boston hand-factory is closed. Within a year President Waterman is making more and better Blackstones than ever (a Havana long leaf filler with a Sumatra wrapper). Today he has 126 machines, each capable of popping out 1,000,000 cigars a year.

There had, of course, been partial achievements on the long road from 1898 to 1919. What President Waterman had bought (or rather leased) were the first "Fresh Work Cigar Machines," that is, machines capable of taking in plain ordinary cured tobacco at one end and delivering at the other end the oddly shaped package which mankind has determined shall be known as a cigar.

Also we must note that during this period there had occurred, besides a War, the Battle of the Trusts. In 1911 the American Tobacco Co., a thorough-going trust if there ever was one, was dissolved. Its machinery-making was already in 1900 segregated into the American Machine & Foundry Co., of which Rufus Patterson was organizer and has always been president. Since this was the very core of the whole tobacco business, there were, of course, arrangements made whereby all tobacco companies could buy cigarette machines and buy or lease other machines on equal basis.

After 1917, things began to happen faster. Half a dozen independent companies held a series of general conclaves and emerged triumphantly united as the General Cigar Company. At the time of the merger these companies were manufacturing no less than 150 different brands of cigars. Four years after the merger, in 1921, General Cigar was concentrating on only five brands, and their sales had jumped from 450,000,000 to 600,000,000 (and 1921, though a good year for wines, was a bad year for cigars). Of these five brands, one, the Wm. Penn, deserved mention if for no other reason than that its makers shrewdly claim that its conception was due solely to the late Vice President Marshall's remark about five-cent cigars. When that Hoosier smoked his first Wm. Penn he remarked, "By golly, it is a good cigar," and his words thereafter achieved a sort of immortality by appearing on every one of Wm. Penn's many millions of boxes. Then, too, the Congress Cigar Company concentrated on machines and it dared do what no company before had dared, namely, to manufacture only one cigar, the La Palina, today, they will proudly inform you, sold in 85 per cent of the country's retail outlets.

Then came George Washington Hill and "Spit." The machine was getting along very well without him. But it was shy. The mob of smoking-room wiseacres swore you could never fool them with a machine-made cigar. Actually, of course, they were being fooled by millions daily. Blackstones, Wm. Penns, La Palinas, Robert Burns, White Owls, all were machine-made. But the machine did not boast about it. In fact Mr. Patterson tacitly agreed with all machine-users that he wouldn't tell a soul about their traffic with him. It was left for Mr. Hill to see a great stunt and a great profit in turning the Pariah into a Virgin. "No spit on these Cremo cigars of mine," cried he, referring speciously to a method of sealing cigars by saliva which nearly all hand-manufacturers in the United States had long since abandoned. "They are pure," cried he. "My machine has made them so." And of course it sounded very much as if Mr. Hill's company had shaken the machine out of its sleeve at the precise moment when he, never still for long, was ready to amuse the mob with another stunt, at, of course, the mob's expense. But one thing Mr. Hill certainly is not. He is not futile. His bombs go off. His spit spat. With the result that the making of cigars by machinery is no longer a secret.

A machine will make 1,000,000 cigars per year. That is to say, all the cigars the world uses could be made by 20,000 machines. Actually there are only about 4,500 machines in existence. But nearly all of these are in the United States, so that over one-third of all American production is machine-made. The distribution of machines in the United States is as follows:

Pennsylvania	1,710	Ohio	102
New Jersey	770	Indiana	80
Missouri	364	Massachusetts	56
Kentucky	324	California	22
New York	224	Louisiana	20
Florida	193	Georgia	16
Virginia	142	Minnesota	6
Michigan	128	West Virginia	6
		Iowa	2

The economics of the machine, however devastating, are quite simple. Before surveying its wider aspects, let us take a brief look at the affairs of the company which makes the machine. This company is the International Cigar Machine Co., two-thirds of whose stock is owned by American Machine & Foundry. With 4,000 machines in use by the cigar manufacturers, the International Cigar Machine Co. can make about $3,000,000 per year. With 6,000 machines in use it can, theoretically, make something less than $5,000,000. With 20,000 machines in use, enough for the present global production, it can make an amount which makes theory limp. At any rate, the $8,000,000 is certain to be repaid many fold—and the "grief"?

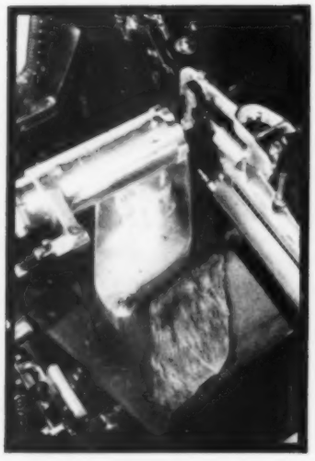
[*Continued on page 116*]

TO THE right is reproduced a portrait of Mr. Rufus L. Patterson by Sir William Orpen. Sir William's early fame as a painter rested largely on his canvas "Hamlet" and his fantastic scenes of Ireland. Lately, however, he has turned almost exclusively to portraiture. Of American industrialists and financiers he has painted Andrew Mellon, George F. Baker, H. P. Davison, General W. W. Atterbury [reproduced in FORTUNE, *May, 1930,] Otto Kahn, W. R. Grace, General T. Coleman du Pont. Few other portait painters receive, as he does, approximately $15,000 for a commission. Of his American sitters he says: "They are the most model understanding sitters I have ever had . . . It is really remarkable the wide range of subjects the average American business man can discuss with knowledge."*

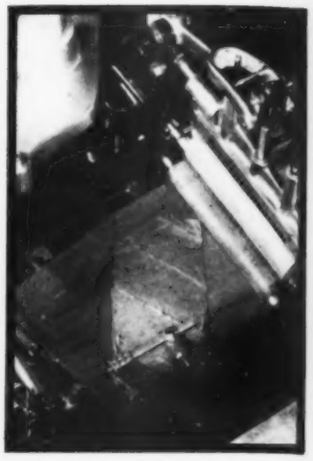
PORTRAIT OF RUFUS L. PATTERSON

BY SIR WILLIAM ORPEN

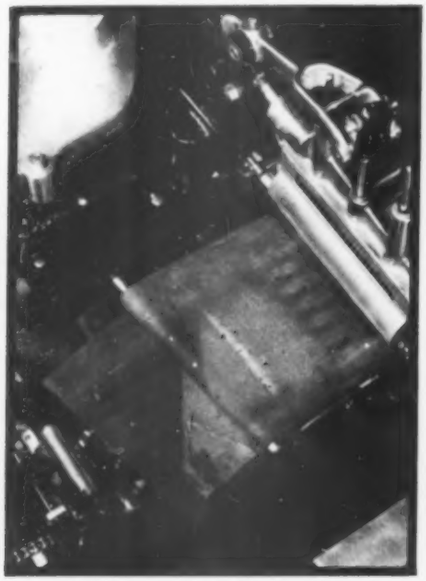
8.—The leaf is held in place by air suction through the little holes you saw in the preceding picture. Then the thing at the top of the picture swoops down on the leaf. As soon as it touches the leaf, the air suction, holding the leaf down, is released; the swooping object begins to suck and therefore picks up the leaf. At the same time the leaf is cut into the shape you can already see outlined on it. Air suction is the only means of holding the leaf in place, and the use of air suction is one of the machine's most unusual features. In good cigars the fillers are made from whole leaves. But in cheaper cigars the fillers are made from so-called scrap, which is chopped up tobacco. The tobacco left over after the cutting shown above is used for scrap.



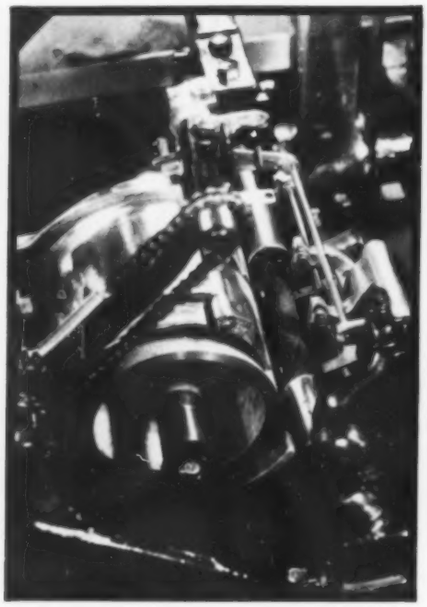
9.—Then the swooper takes the leaf and drops it on a perforated rubber belt which holds it in place by suction applied through the little holes which are here visible. For the third time now suction has been the main principle of the machine's operation. The rubber belt is the same one of which part made the loop wherein we dropped the filler (see picture 6 on page 57). The leaf shown here is destined to be what cigar men call a binder.



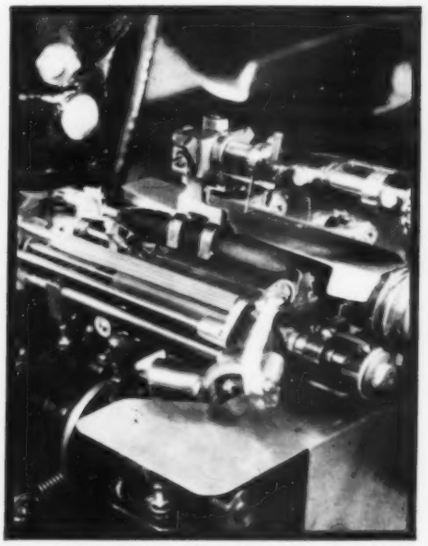
10.—On the corner of the leaf (called a binder) a little roller shown above applies a sort of sanitary glue called tragacanth. In obsolete hand factories, instead of tragacanth, cigar makers were reported to use spit. This practice was made the basis of the recent advertising campaign for Cremo cigars (*Spit is an ugly word*). The campaign originated in the fertile brain of Mr. George Washington Hill, president of the American Tobacco Company.



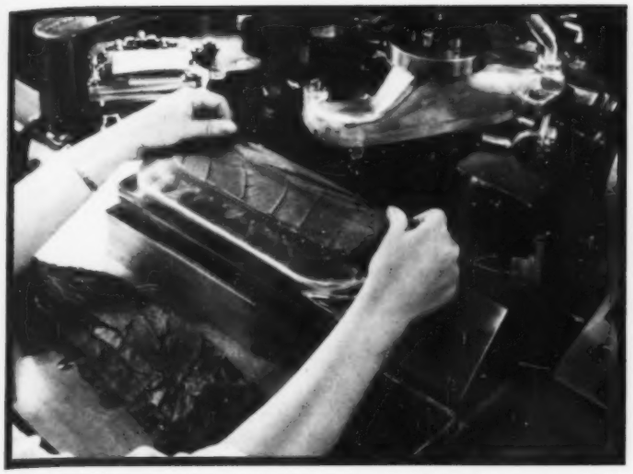
11.—Sleight-of-machine. There is a roller attached to one end of the rubber belt. It formed one end of the loop in picture 6. You see it here rolling toward the left of the picture. As it rolls it drags the loop and therefore the filler of tobacco after it. And as it rolls it also twirls the large leaf of tobacco around the filler. In this picture most of the binder leaf is already around the filler. This operation happens so swiftly that only the most accustomed eye can apprehend what is happening.



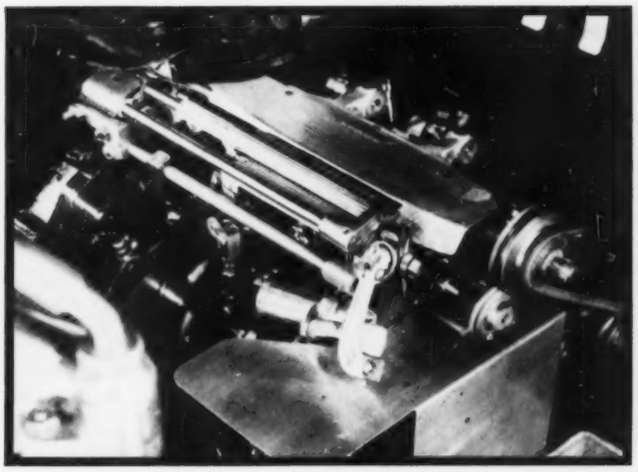
12.—Steel fingers snatch the filler and its binder as it leaves the rubber belt. The cigar is then rolled around the cylinder, thereby making for even distribution of filler within the binder. Then more steel fingers, which here you cannot see, place the cigar between the two molds where you see it now. These molds swiftly spin around and shape the ends of the cigar into points. The making of a cigar, incidentally, takes only six minutes.



13.—Now you see the cigar with ends pointed going between a little set of spinning rollers which in time will twirl it about as its final wrapper is wrapped about it. Wrapping the final wrapper around the cigar is obviously easier than wrapping the binder because by this time the cigar is already shaped like a cigar. On the facing page you will see this operation which again calls for suction. In its reproduction of the entire process of cigar manufacture, FORTUNE has attempted to show it as the eye perceives it and has therefore not retouched any of Mr. Gerlach's photographs.

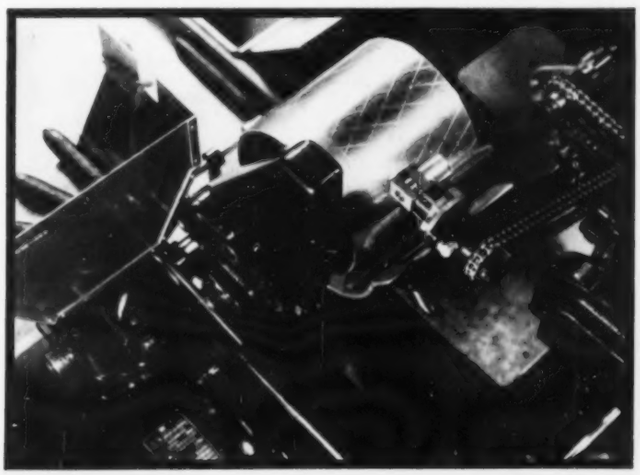


14.—This is Jane with a machine nearly like Libby Lou's, except that the shape cut out of the tobacco leaf is different and the quality of leaf is better. Sumatra leaves are unquestionably the most popularly used as wrappers for good cigars.



16.—Here a small rotating two-bladed knife (it somewhat resembles a propeller and you can see it at the right center of the photograph) cuts the wrapper exactly to fit the end of the cigar.

15.—(Above). As in the case with Libby Lou's machine, a swooping thing sucks up the tobacco leaf and places it not on a rubber belt (as shown here) but on the rollers where we left the cigar. A needle (you can see it between the two rollers), catches an end of the tobacco leaf, transfers it to the end of the cigar (which, remember, is twirling around on account of the spinning rollers), and holds it there till an overlap of the leaf has been made around the cigar. Then the needle withdraws, and the cigar wraps itself in Jane's leaf of tobacco which, incidentally, is called a wrapper.



17.—(Above). After the wrapping, the ends of the cigar are again neatly cut by a knife and again (as shown here) the cigar is rolled around a cylinder which smooths the wrapper. Often after this operation the cigars are wrapped in silver foil or cellophane.

18.—To the left is a picture which needs no explanation. The cigars shown are anonymous, but they might as well have been any of a half dozen most famed U. S. brands. All the photographs shown on this and the preceding pages were taken at the American Machine & Foundry Company plant in Brooklyn, New York. This company and its subsidiary, the International Cigar Machinery Company, are not cigar manufacturers. But for purpose of testing their machinery, they operate under a cigar manufacturers' license and purely for experimentation and research duplicate in Brooklyn the operations and cigars of all the world's leading manufacturers.

XUM

Rembrandt's Painting of Solomon's Mother

Only the French Revolution impaired this investment. In less than two centuries its value increased 2,000 per cent.

SASKIA VAN UYLENBORCH, a plump and lovely Frisian, was the wife of Rembrandt Harmens van Rijn and the mother of four of his children. It is quite well established that she also appeared as the wife of David and mother of the fabulous Solomon in a painting by her talented husband. Rembrandt was, patently, fascinated by the story of Bathsheba—how David sent her first husband, Uriah the Hittite, into the forefront of the battle so that adultery might be conveniently prosecuted, how Uriah perished and David was tortured by remorse until he had begged forgiveness of the Lord. The succinct, conservative biblical account of this affair was well calculated to invite more explicit enlargements: "And it came to pass in an eveningtide, that David arose from off his bed, and walked upon the roof of the king's house; and from the roof he saw a woman washing herself; and the woman was very beautiful to look upon." (II Samuel 2:2)

REMBRANDT'S PORTRAIT OF JAN SIX

Courtesy Metropolitan Museum
SIR THOMAS LAWRENCE—SELF-PORTRAIT

And so Rembrandt, impelled to paint the beauties which had eased a king's insomnia, paid his wife the delicate compliment of producing a Bathsheba in her golden image. It was completed in 1643, the year following Saskia's death. The artist himself was then only thirty-seven. Perhaps Saskia's passing left him more than ever dependent upon his work for satisfaction. At any rate, this *Toilet of Bathsheba after the Bath* exhibited a splendid confidence in design and a technical perfection which were uncommon in his work of this period, which presaged, rather, those qualities he was to achieve in his bitter maturity when the only joy left him was the practice of his art.

The *Toilet of Bathsheba* is extraordinary in another respect; it is one of the few paintings, now adjudged important, whose economic history is reasonably complete. The markedly human process by which man gradually invests those objects whose great value is indefinable with a value which he can appreciate and compute, money value, is easily traceable in the case of this canvas.

In the year 1734

In 1734, ninety-one years after the *Toilet of Bathsheba* was painted, Holland was a country vastly changed from the Holland of Rembrandt's time. If it be true that the complexion of a nation changes with the passing of its great individuals, then consider what changes had been wrought by the death, not only of Rembrandt, but of Spinoza and of William III of Orange. With the demise of the last, Holland had ceased to be a world power. Its noon of influence was done. The heirs of the commercial adventurers who had filled its coffers and borne its flags throughout the world lounged by the sluggish Amstel in Amsterdam and spent their grandfathers' earnings on the decorations of idleness. But the connoisseurship which usually accompanies such decadence was not theirs. Rembrandt, for instance, and his vigorous ilk had long since been repudiated in favor of such pallid performers as van der Werff. And this senile placidity of the Dutch did not entirely conceal the very real, grave decay of the national tissue which underlay it all; collapse was imminent; its heralds had already made themselves heard.

It was in 1734, in these diseased, uncomfortable times, that the *Toilet of Bathsheba* was first sold—by Willem Six, in Amsterdam, for 265 florins ($106). (All evaluations in dollars are necessarily only rough approximations.) This

VIGÉE LEBRUN—SELF-PORTRAIT

Courtesy Metropolitan Museum
BENJAMIN ALTMAN BY ELLEN EMMET RAND

Courtesy Metropolitan Museum

THE TOILET OF BATHSHEBA—*REMBRANDT VAN RIJN*

was by no means an extraordinary price for a fine painting. Almost a century previously (1642) when the Duke of Buckingham's pictures were sold, a Tintoretto brought 1,000 florins, and a Titian 400. Especially pertinent are these examples because the interval between the sale of the pictures and the death of the artists was approximately the same as that between the sale of Bathsheba and the death of Rembrandt (sixty-five years).

Willem Six was a descendant of the wealthy burgomaster-poet, Jan Six, friend and associate of Rembrandt through his unfortunate years. At dinner at the Sixes, Rembrandt once completed an etching, on a wager, while waiting for a torpid maid to produce a pot of mustard. Six presumably acquired Bathsheba directly from Rembrandt, possibly at one of those tragic auctions to which the painter's goods succumbed. It is inconceivable that Willem, had he been either as financially secure or as esthetically discerning as his ancestor, would have allowed the picture to leave the family. There are cultivated Sixes in Holland today, amateurs of the arts, who doubtless regret the fact.

But even though the Republic of Holland was breaking down, the enduring value of the Rembrandt began to be manifest in its increasing cash value. Seven or eight years later, with Holland on the eve of treaty-enforced participation in the War of the Austrian Succession, one Bicker van Zwieten, who had acquired the picture after the Sixes, realized a nice profit by selling it at The Hague for 350 florins ($140).

It is perhaps significant, however, that no Dutchman gave this price; this time the picture left the country. And it may be said that its international fame was by way of being established. Like a debutante who travels from her sequestered home to the ballroom where she faces the appraising eyes of all society, Bathsheba left congenial Holland and entered the collection of Count Heinrich von Brühl of Dresden, at that time Prime Minister of Augustus III, Elector of Saxony and King of Poland, where she was critically observed by the artistic and social fashionables of many nations.

1763—Frederick the Great

Count von Brühl was a bad statesman; he appropriated public moneys for private use and is generally credited with the 18th century degeneration of Saxony. But he seems to have possessed a genuine artistic flair. Each morning he consulted a great catalogue kept by his valet to determine in which of his three hundred suits of clothes he would begin the day. And possibly indicative of the family tastes is the fact that his son, Karl Friedrich Moritz Paul, was a good friend of Goethe and intendant-general of the Prussian royal theatres and museums. Certainly when the Count decided to sell the painting which had been so thoroughly ogled by his diplomatic friends, it was not because he did not appreciate its loveliness. Through weal and woe he had kept it, but in 1763 Frederick the Great of Prussia, who hated the idea of women as much

[*Continued on page 120*]

A Bourgeois Engine

Is the Diesel, comfortably established between aristocracy and proletariat of prime movers.

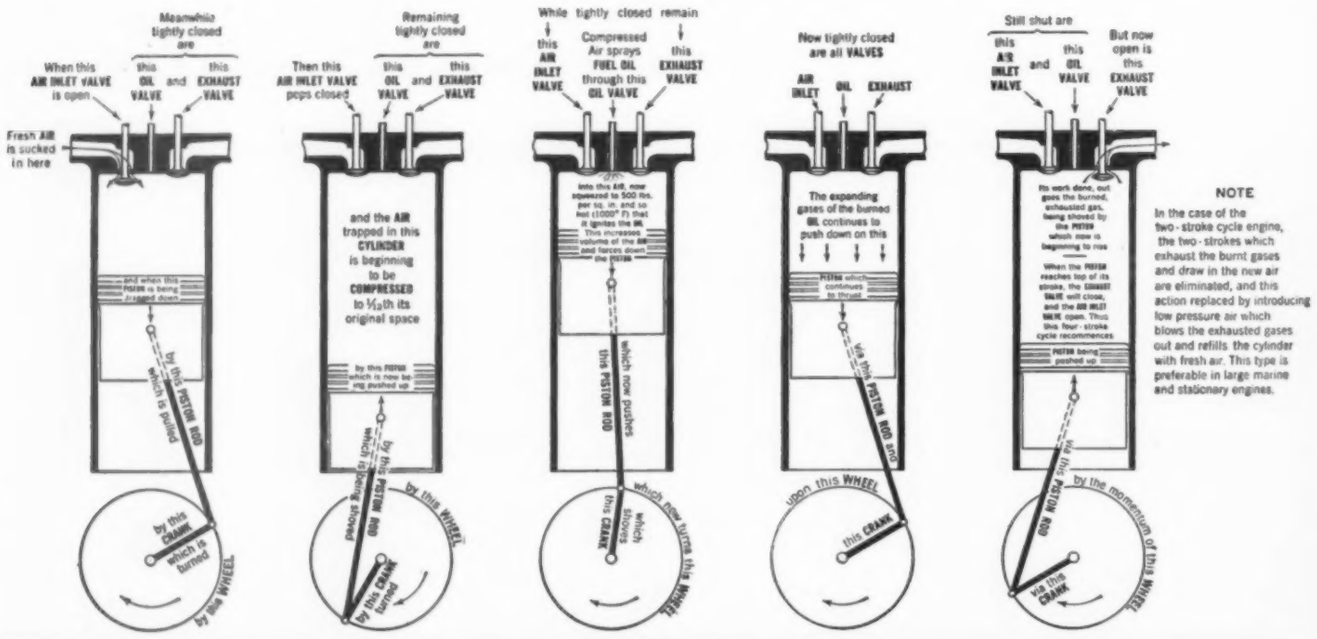
RUDOLF Diesel, the German engineer who designed the Diesel engine, drowned himself in the English Channel in September, 1913. He jumped from the deck of a Channel steamer because his engine, patented twenty-one years before, had met with scant commercial success. Engineers had accepted it, but *entrepreneurs* were apathetic—and shrewd. They were not sufficiently interested to buy the patent rights from the inventor. They preferred to wait until Diesel's patents expired, which they did in 1912. On that confused and troubled night in September, 1913, things looked not at all promising for the engine's future.

Like many another suicide, Rudolf Diesel jumped at just the wrong moment. Had he waited one year, he would have seen the warring nations rushing the construction of his engines for submarine surface propulsion. He would have seen his great machine started on the upward curve of its meteoric career, a curve that today points more sharply upward than ever before. He would have seen 440,000 horse power of his engines turned out annually in this country alone. On the sea the Diesel reigns supreme among practically all classes of ships except the superliners. Its most brilliant triumphs are the three motorships, the *Saturnia* and *Vulcania* (24,000 tons each) and the *Augustus* (33,000 tons), built by Italy for de luxe passenger service. Last fall Canadian National Locomotive 9000, driven by electricity generated by Diesel motors, was a nine days' railroad wonder. And this April an even more sensational application of Diesels, to aircraft, was a nine days' aviation wonder. The recent tragic death of the designer, Captain L. M. Woolson of Packard Motors, focused popular attention still more sharply on his engine. Already the Diesel is used on 54 per cent of world shipping tonnage under construction. And now within a year it threatens to make further incursions into transportation by rail and by air.

Great things have been done with Diesels, and great things remain to be done. But there is small prospect of the world's prime movers going completely, or even largely, Diesel. From a horsepower point of view Diesels are the bourgeoisie of enginedom. Below 100 horsepower is the vast and potent proletariat of automobile engines, each of them small in itself, but in the aggregate the most important group of prime movers. Above 20,000 is the horsepower aristocracy of the great turbines, steam and water, which drive the wheels of industry on land and the propellers of superliners on sea. The Diesel occupies a middle class of from 100 to 20,000 horsepower, which takes in moderate-sized ships, contracting equipment, smaller power plants, pumps, and general industrial uses. This is a broad domain but the automotive and superpower domains are both greater in terms of horsepower. The Diesel is confined to the middle class by a series of limitations, some of them inherent, some of them now being removed by engineers. These limitations, and the peculiar advantages of the Diesel as well, can be understood only by peering for a moment into the mechanics of the Diesel engine.

Both the Diesel engine and the ordinary automobile motor are internal combustion engines, which means they get their power by starting a fire in a confined space. The point of departure between the two is in the methods they use to start this fire. Automobiles do it by putting

This is How Each Cylinder of A Four-Stroke Cycle Diesel Engine Works


Meanwhile tightly closed are
When this AIR INLET VALVE is open
this OIL VALVE
and
this EXHAUST VALVE
Fresh AIR is sucked in here
and when this piston is being dragged down
by this PISTON ROD which is pulled
by this CRANK which is turned
by this WHEEL
Remaining tightly closed are
Then this AIR INLET VALVE pops closed
this OIL VALVE
and
this EXHAUST VALVE
and the AIR trapped in this CYLINDER is beginning to be COMPRESSED to 1/16th its original space
by this PISTON which is now being pushed up
by this PISTON ROD which is being raised
by this WHEEL
by this CRANK turned
While tightly closed remain
this AIR INLET VALVE
Compressed Air sprays FUEL OIL through this OIL VALVE
this EXHAUST VALVE
Into this AIR, now squeezed to 500 lbs. per sq. in. and so hot (1000° F) that it ignites the OIL. This increases volume of the AIR and forces down the PISTON
which now pushes this PISTON ROD
which now turns this WHEEL
this CRANK which shoves
Now tightly closed are all VALVES
AIR INLET
OIL
EXHAUST
The expanding gases of the burned OIL continues to push down on this
PISTON which continues to thrust
via this PISTON ROD and
upon this WHEEL
this CRANK
Still shut are
this AIR INLET VALVE
and
this OIL VALVE
But now open is this EXHAUST VALVE
Its work done, out goes the burned, exhausted gas, being shoved by the PISTON which now is beginning to rise
When the PISTON reaches top of its stroke, the EXHAUST VALVE will close, and the AIR INLET VALVE open. Thus this four-stroke cycle recommences
PISTON being pushed up
via this PISTON ROD
by the momentum of this WHEEL
via the CRANK
NOTE
In the case of the two-stroke cycle engine, the two-strokes which exhaust the burnt gases and draw in the new air are eliminated, and this action replaced by introducing low pressure air which blows the exhausted gases out and refills the cylinder with fresh air. This type is preferable in large marine and stationery engines.

THIS MIGHT SERVE AS THE DIAGRAM FOR A GASOLINE ENGINE EXCEPT FOR THE ABSENCE OF SPARK PLUGS. THE OUTSTANDING POINT OF DEPARTURE IS THE ELIMINATION OF ELECTRIC IGNITION

gases under pressure and then striking an actual spark of fire in the cylinder. Diesels do it by compressing the air in the cylinder about 500 pounds a square inch (as against 40 to 90 in automobiles), thus making the air terrifically hot. Oil is then shot into the cylinder. On coming into contact with the hot air it bursts into flames, which expands the air in the cylinder, which forces back the piston, which turns the motor, and so on.

The strong points of this motor are, first, thermal efficiency, which refers to the percentage of heat from the fire that is converted into power. In a Diesel this percentage is roughly about 30 per cent as against a gasoline motor's 20 per cent, a steam turbine's 25 per cent, and a locomotive's 6 per cent. The ability to use low-priced fuel is also important. The high temperature obtained by compressing the air in the cylinder, a temperature of 1,000 degrees Fahrenheit, makes it possible to consume fuel oil or even coal dust satisfactorily, because these fuels at that temperature are completely volatilized and burned at once. Fuel oil is not only cheaper than gasoline (six cents a gallon is a good price) but it is also noninflammable, except at the high temperature produced in the cylinder. Diesels thus eliminate fire hazard.

The limitations of the Diesel are equally definite. For smaller horsepowers, Diesel calibration (fuel measuring) offers great difficulties. Any engineer knows that the mechanics of sucking a vaporized mixture of gasoline and air into a cylinder are much simpler than those of forcing in an infinitesimal drop of oil against a 500 pound pressure. The smaller the horsepower of the engine, the smaller the drop and the more hairsplittingly accurate must be its measuring. As a mass producer of superpower, the Diesel is limited by its very excellencies. The outstanding virtue of the Diesel is its even efficiency at all speeds and all powers. And the Diesel's main handicap in superpower competition is the converse of this virtue: it does not gain efficiency as its size increases. A big turbine does: the bigger it gets, the cheaper it is to build and the cheaper it produces power. Diesel power costs the same per kilowatt no matter what the size of the installation.

Marine engines

An engine with such definite excellencies and such equally definite limitations must have a clearly marked place in the various fields of power. Not Britannia but Diesels rule the waves. They dominate the classes of boats between 50 and 5,000 tons and are extending their dominion into the larger ship class. More economical in terms of weight, of fuel costs, and of both fuel and engine space than steam engines of the same power, they are ideal for yachts and cargo boats. On the very large ships, steam engines (turbines or reciprocating) with oil as fuel produce power cheaper. Especially on the North Atlantic, where the run is comparatively short and cargo space not vital anyway, steam is the logical thing. But in smaller boats, on longer runs, with cargo space more important, Diesels are the ideal installation.

When it is necessary, however, as in the case of the *Europa*, to develop 138,000 horsepower to drive 49,000 tons at 27 knots, the Diesel cannot as yet compete with steam. The *Europa*, by the way, admits Diesel's superiority for small power by employing 3,000 horsepower of Diesel to operate its auxiliary services. The first large motorship afloat was the *Selandia*, tried out in 1912 with an engine constructed by the famous firm of Burmeister & Wain, of Copenhagen. Requiring no funnels, the *Selandia* had none, setting a ruinous example for several succeeding passenger ships. So irresistible is the passenger craving for the funnel that the *Leviathan* has one fake smokestack to add to its impressiveness, and all motorships carrying passengers, and many yachts, carry purely ornamental funnels. The *Saturnia*, *Vulcania*, and *Augustus* have already been mentioned as spectacular users of marine Diesels. The mysterious new German cruiser, *Ersatz Preussen*, will include 50,000 shaft horsepower Diesels among its other phenomenal equipment. At the other end of the scale, a domestic company is known to have in preparation an outboard motor of the Diesel type, to sell on its dependability. The most impressive statistic regarding the Diesel's marine ascendancy is this: in 1918 there was built steam tonnage of 3,685,000, Diesel tonnage of 76,000; in 1928, 951,000 steam tonnage was built, 786,000 Diesel.

Electric power

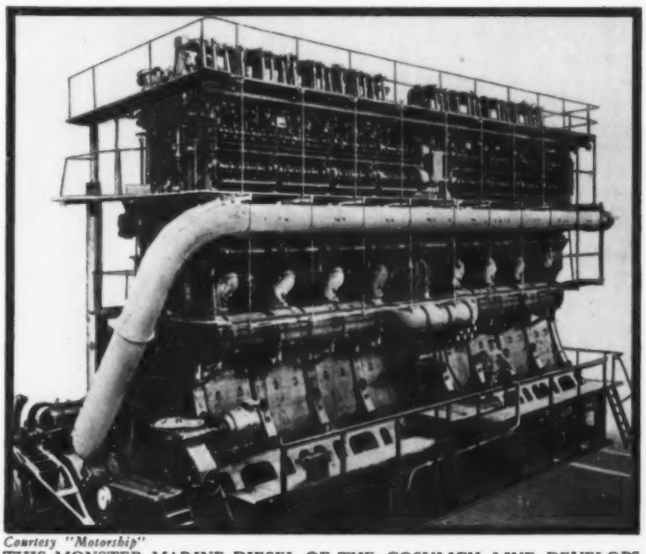
A steam turbine plant supplying a steady load of 25,000 horsepower will make electricity cheaper than a Diesel plant. When a steam unit in such a plant, however, produces only to meet evening peak loads, then labor and fuel will bring the cost of its product above and sometimes way above that of a Diesel, which burns fuel and needs care only when producing power. When power has to be delivered to scattered communities over long and expensive lines, then several local Diesel plants of 1,000 to 15,000 horsepower are cheaper than one big turbine plant. For this reason, superpower often makes little progress into small communities already owning Diesel plants. Thus, the town of Menasha, Wiconsin, has successfully resisted attempts to be brought into the superpower system in that area and using Diesels for twenty-five years has been producing power for less than two cents a kilowatt hour.

Courtesy Packard-Diesel Co.
THE 225 HORSEPOWER PACKARD WEIGHS 510 POUNDS

The utilities themselves have purchased Diesels to carry the heavy evening loads of moderate-sized plants. Power companies who depend on a seasonal water supply may use Diesels to fall back on in emergencies. Such a plant is in operation at Miraflores Locks, Canal Zone. At Tucson, Arizona, where coal costs $8.00 a ton, where there is no water power in summer, where fuel oil in tank cars costs less than five cents, the power plant of the Tucson Gas, Electric, and Power Company is all Diesel, 11,540 horsepower, largest in the country. A large Diesel installation has just been contracted for by the Consolidated Anglo-Chilean Nitrate Corporation, consisting of five engines, with a horsepower of 28,000.

It is significant that it takes *five* Diesels to produce this horsepower, which *one* steam or water turbine could, and does, produce with no trouble at all. And these five cost no less to build per kilowatt and produce power for no less per kilowatt than would one unit, or ten. The turbine, on the other hand, gets bigger and cheaper at the same

[*Continued on page 127*]



Courtesy "Motorship"
THIS MONSTER MARINE DIESEL OF THE COSULICH LINE DEVELOPS 24,000 HORSEPOWER, WEIGHS 840 TONS

Five Who Found

Millions they pay back. Man-made, they

SUNNY JIM was born in 1902 to the Hecker H-O Company, Incorporated, the younger of twin old gentlemen. His elder, Jim Dumps, preceded him by one package of Force. This was in the days before constipation had gone into business and achieved respectability, and the most the Hecker H-O Company, Incorporated, thought fit and proper to suggest about its breakfast food was contained in the contrast between the dismal, melancholy, hypochondriac countenance of the sluggish and Force-less Dumps, and the chipper and energetic visage of the punctual, Force-fed James. Dumps from the start was a failure in life and shortly passed away. James, on the contrary, lived and shone and became a success. So great a success, indeed, that he ruined his family. He doubled the sales of Force in thirty days. A million dollars was appropriated for his exploitation. And in 1903 the company was reorganized. The consequence was that Sunny Jim retired to a corner of the carton from which, with undiminished optimism, he contemplated the best of all possible worlds. In 1927 he was sent abroad. And from that time on he enjoyed two glories—his brilliant past and his frequently remarked resemblance to President James Rowland Angell of Yale.

It is possible that Sunny Jim's work might have ended there. With yeast and bran everywhere making their brazen claims and even in the New York *Times*, with Listerine telling everything down to the last whisper—what could a bright smile possibly signify? James in his corner was as conspicuous in the modern health-food market as the glimpse of a petticoat in a Follies' chorus. Something had to be done. And James did it. He tucked his cane under his elbow, threw his hat into the next column, and raced from the corner of the box of Force to the center of Bran Dandies. Where now, with neither innuendo nor suggestion, but with good round speech, he Tells the World.

THE Old Dutch Cleanser Girl, goddess of household purgation to the Cudahy Packing Company, is a creature of ambiguity. Her face is veiled. Her trade value is shrouded in mystification. But in 1929, her appearances in the advertising pages of the *Saturday Evening Post* cost her protector $195,000.

She first appeared in a furnished room back of the Omaha Stockyards in 1905. The room was occupied by an unhappy young Austrian immigrant. He was staring at an object on the wall and meditating upon his employer, old Mr. Cudahy, upon certain deposits of volcanic ash in Kansas and Nebraska theoretically suitable for the manufacture of cleansing powder, upon the stupid and hidebound unwillingness of purchasers to purchase anything new, all of which, he perceived, was rapidly producing a million dollar deficit on the company's books. He had meditated for a considerable time when the object on the wall penetrated from his eye to his attention. It was a picture of a little Dutch girl with a stick in her hand. Beyond the stick was a goose. Beyond the goose was a vista of rural Holland. And suddenly all was clear. With the irrefutable logic of inspiration, the unhappy immigrant perceived that Holland was a country famous for the lustrations of its people and that nothing was more calculated to appeal to the preconceptions of powder purchasers than this embattled Dutch girl with her stick. As for the goose, the goose was irrelevant. It was dirt the child was chasing. And so, it appears, it was.

Since then the child has galloped through the world with special titles in Spanish, Portuguese, Chinese, Danish, Japanese, Italian, French, (and French-Canadian!). Her cleanliness has never diminished; her fame has increased. The Austrian immigrant is less widely known.

THE Arrow Collar Man has no more resemblance to himself, from one advertisement to the next, than a transmigrating Buddha who moves from the corpse of the head of the local Lamassary to the body of the son of the richest horse trader. What holds him together—what has held him together in his various personifications since 1905—is the pencil of Joseph C. Leyendecker. And the linen round his neck. For twenty-five years Mr. Leyendecker has been infallibly forecasting masculine styles, and for twenty-five years the Arrow Collar Man has been displaying them. He put the campuses of 1910 through the high Clifton, the young men of 1915 through the Gothic with its rounded points, the post-War lads of 1920 through the free and easy Prince, and the well-dressed man of 1925 through the Guards.

He has served as the glass (slightly flattering) of fashion to six college generations and the mould (rigid enough) of form to twice that many crops of bank clerks. Since the Tennis Cabinet he has been a term of he-man reproach. And he has sold a great many Arrow Collars. Altogether Cluett, Peabody estimate that they have spent on his Attic countenance and careful ties the sum of $22,000,000. Since 1923 he has appeared, upon proper occasions, in soft collars. Recently he has not succeeded in outshining his rivals quite so conspicuously as in his glorious heyday, and Cluett, Peabody earnings have fallen off.

Mr. Leyendecker has been kinder to his creation than most commercial artists. The Arrow Collar Man has been in and out of matrimony (or if he hasn't he is a shameless, shirt-sleeved wanton) any number of times; he has seen

Cluett, Peabody & Co., Inc.

1909

Eternal Youth

receive; more millions they may die but cannot grow old.

innumerable operas (and been everlastingly bored by them all); he has waited for an unbelievable number of tennis matches to finish and taken an almost active part in any number of sports; he has sat around in the best clubs in America. His hair has been curly and straight, dark and light, but such vagaries are emphatically pertinent in so kaleidoscopically social a life as his. Always he has been handsome. And for years now he and the girl with the handsome shawl over her shoulders have been traveling in Cuba and Central America and abroad. It is not an altogether unattractive life.

1911

1927

Courtesy National Biscuit Co.

SOMEWHERE in the United States there lives a gentleman of thirty-five who recalls his youth. For thirty years now he has been recalling it. For thirty years his boyhood, in boots and slicker with an oilskin hat, has dogged his heels. Perhaps Mr. Gordon Stille, for that is his name, loves that child. Perhaps, like Hamlet with the jester's skull, he addresses regretfully the face of what is gone. Perhaps he doesn't.

It was his uncle, Mr. Joseph J. Geisinger, an advertising man, who gave fame to the childish rosy face. The National Biscuit Company wanted a symbol for their "innerseal" idea, and Mr. Geisinger decided to have a picture of an old fisherman in a slicker eating nice dry biscuits out of a nice dry innerseal box. But the fisherman didn't seem to do. Mr. Geisinger, on sudden inspiration, seized his nephew, found some rubber boots, cut down a slicker to fit, and created the Uneeda Boy. An artist painted the photograph and when Mr. A. W. Green, then N. B. C. president, saw it, he went into ecstasies. The N. B. C. thereafter spent $5,000,000 on the likeness.

Mr. Stille may have found much fine amusement in watching his youth disport itself on the trolley signs and billboards of the country. At first he merely stood in his oilskins and hugged his biscuits and gazed. Lately, however, he has altered his positions and has even spoken. And now, one hand in the hand of an elderly sou'westered fisherman (which his elder self has probably never met), he imitates the gestures of those who go down to the sea with pretzels. But what should most amuse Mr. Stille are the suits of many dozens of parents who claim that their offspring sat for the original photograph. Including that of one man who insisted that he himself had been the original, that he had been kidnapped, knocked on the head, forcibly photographed . . .

Courtesy Holeproof Hosiery Co.

THE Holeproof Girl is a great many women with the same legs. And the legs are Mrs. Phillips'. Coles Phillips began drawing about 1900 in a "factory" where a picture, started by someone who was good at heads, passed from hand to hand around the table. Mr. Phillips sat where the silk begins. And though he later mastered the anatomical intricacies of elbows and shoulder blades, he never lost his skill at calf and knee. Consequently the great Holeproof campaign of 1919 was a Coles Phillips campaign. By this time, however, Mr. Phillips had found and married the most beautiful knees and ankles of his expert acquaintance. They belonged to Teresa Hyde, who now writes for the *Saturday Evening Post*. And they are, or ought to be, the object of the prayers and gratitude of every mulberry grower, silkworm fancier, thread weaver, rayon salesman, and Cheney brother on earth. They have put more stenographers into silk stockings and more silk stockings into the undergraduate consciousness than any other agency on record, not excepting the stock market. They cost the Holeproof Hosiery Company's advertising department about $350,000 a year. And they were worth to Coles Phillips, up to the time of his death in 1927, from $500 to $2,400 a picture which, after all, is small tribute to perfection. No matter who posed for the particular advertisement, Mrs. Phillips' legs were used. They were added to plumpish blondes and superimposed upon elaborate brunettes. They supported and adorned as many different complexions and physiognomies as the trade, in its tact, required. They were sheathed in as many colors as the trade, in its wisdom, decreed. And they were always elegant and sleek and worldly wise and knowing. If they are less familiar now than the bearded Smith Brothers or the prosperous countenance of King C. Gillette, it is solely because our Anglo-Saxon eyes distinguish people by their faces. It is otherwise in Teheran.

Clash of Steel

From November to May, two mighty armies advanced and retreated across the map of steel. Here FORTUNE follows their movements, with a pointer, naming critically each maneuver, each general and his aides.

THE Versailles treaty was signed; upon Germany lay the heavy burden of reparations. In this country, the great steel mills found themselves with tremendous capacity and small demand. Out of the German laboratories came brilliant research in alloys, and many a U. S. steel company now sends royalty checks to the Ruhr. Slow and painful was the readjustment of the American industry. New combinations were projected, abandoned, reconsidered. Elbert H. Gary died, and the Morgan-Taylor-Farrell triumvirate followed him. All this was the background of unrest. Through it could be traced the chain of economic necessity. To it could be referred and related the great Bethlehem-Youngstown merger war.

But such historical method is too academic. At least a dozen events suggest themselves as more obvious and immediate starting points for this case history. There was the abolition, in 1924, of the schedule known as *Pittsburgh plus*, which largely increased the cost of shipping steel from the plants in the Mahoning River Valley of Ohio. There was the breakdown in 1921 of the "Billion-Dollar Merger," which would have linked seven steel companies (Republic, Inland, Youngstown Sheet & Tube, Brier Hill, Lackawanna, Cambria, Steel & Tube of America). There was the entrance of Cyrus Stephen Eaton into the industry, in 1925, with a $20,000,000 purchase of the Trumbull Steel Co. There was Mr. Eaton's definite entrance into the Youngstown Sheet & Tube Co. late in 1927 when he bought 125,000 shares of that company's common stock. There was last year's final failure of four years of desultory negotiations for a merger of Youngstown with the Inland Steel Co. Any one of these dates could with reason be picked as the merger battle's genesis.

Actually, however, the war did not seem imminent until the late fall or early winter of 1929, and on September eleventh of last year there took place a colorful and much publicized event which serves as well as any to introduce four of the leading protagonists of the succeeding six months' battle.

On that day Mr. James A. Campbell, for thirty years the chief of the Youngstown Sheet & Tube Co., the most beloved citizen of the steel-saturated Mahoning River Valley, celebrated his seventy-fifth birthday.

Mainly, he celebrated it upon the links of Youngstown's hard, tricky golf course. On the day before his birthday, his house guests already included Mr. Eugene Gifford Grace, the president of the Bethlehem Steel Co. and Mr. Charles Michael Schwab, Bethlehem's genial, talkative chairman. The three men adjourned to the golf course, together with Frank Purnell, the forty-three-year-old chief lieutenant of Mr. Campbell. At the end of their eighteen holes, Campbell and Purnell were one up. So keen was the game (Grace and Purnell are excellent golfers, Campbell under 100, and Schwab indifferently good) that it was resumed on the following day, Mr. Campbell's birthday. The Bethlehem team triumphed: Campbell and Purnell found themselves four down at the end of the round. As Scotch Mr. Campbell had fixed the stakes at twenty-five cents a hole, he produced a one-dollar bill and handed it to Mr. Schwab, who accepted it with much delight. Later he observed that he intended to frame it, as it was the first and last dollar he ever expected to extract from Jim Campbell.

This golfing birthday party is less important for what was discussed by the steelmen than for what was *not* discussed. The four executives did indeed talk of changes in the industry, did indeed ponder mergers, but the conversation revolved about the current plans of Youngstown Sheet & Tube. The Inland negotiations were still on the table; Eaton was welding Republic Steel and the press believed Sheet & Tube would be a part of the combination. All agreed that Sheet & Tube, with a large capacity for sheets and pipe, but with no production of rails or structural shapes, could wisely absorb a company which would fill out its list of products. But no one suggested that Bethlehem was such a company, or that Sheet & Tube should become the absorbed rather than the absorber. Throughout the early fall, Mr. Grace and Mr. Schwab were undeniably interested in Mr. Campbell's problem, but they did not think of themselves as the problem's solution.

On November fifth, Mr. Eaton was given what seemed to him strong assurance that this was the case. He had gone to New York, taking with him T. M. Girdler, who had just left Jones & Laughlin to become chairman of Republic. On that day while the stock market was reeling to new bottoms, he invited Mr. Grace to a luncheon in his rooms at the Biltmore. Two major points were discussed; the first concerned Bethlehem stock, of which about 800,000 shares were then in the hands of the banking group (headed by the Guaranty Trust Company) which had brought out the last of a $139,000,000 issue just before the crash. Mr. Eaton suggested that his interests might take up a substantial portion of this unsold stock. Mr. Grace felt that this would be unwise, would be misinterpreted by the public. The second topic of discussion concerned the steel situation in general. Mr. Eaton later testified in court, quoting Mr. Grace as saying "that Bethlehem was rounded out in its present territory, that nothing would tempt it to come into the Middle West, that if he did it would lead to difficulties with some of his friends, and that Bethlehem's policy was definitely to stay where they were in the East, except for the property that they were then negotiating for on the Pacific coast that would put them on the two coasts, and that they had no intention of muddying the water in the Middle West." Whether Mr. Eaton's memory of this conversation is accurate or not, it is probably true that he left for Cleveland with the impression that his plans need expect no interference from Bethlehem.

At this point Mr. Eaton rested, feeling himself in a secure position. He had indeed become a great steel power. He was

about to complete the Republic deal, creating out of the old Republic Iron & Steel Co., Inter-State Central Alloy Bourne-Fuller, and Donner a new $350,000,000 company. He owned or controlled personally about 75,000 shares of Sheet & Tube; the Cliffs Corporation, in which he held a half-interest (the Mathers held the other half), owned 125,000 shares; another 60,000 shares were held by the group of companies close to him—three investment trusts: Continental Shares, Commonwealth Securities, International Shares, and, of course, the banking house of Otis & Co. In addition, he still held something like 200,000 shares of the Inland Steel Co. All in all, it probably represented the largest stake any individual had in the industry (Mr. George F. Baker's holding of U. S. Steel is currently valued at $16,000,000) and was an extraordinary position for the pleasant, mild-mannered boy from Pugwash, Nova Scotia, to occupy. Cyrus Eaton is forty-six. He came to Cleveland in 1907, was given a job by the elder Rockefeller, played with utilities for a time, and in 1914 went into banking. The question was not raised, in 1916, whether Cyrus Eaton was becoming a partner in Otis & Co. or whether Otis & Co. was acquiring a partnership in Mr. Eaton. Since that time the two have been indistinguishable. They are concerned with many industries other than steel, most notably and recently with rubber. To this industry, Mr. Eaton turned his attention in the early winter, allowing the steel situation to simmer for a time. In fact, until the seventh of March.

. . .

Into the precise phenomena which changed the plans of both Mr. Campbell and Mr. Grace, it is difficult and profitless to inquire. By the early part of February, Mr. Grace found himself sitting in a large Manhattan office talking with Mr. Campbell, Mr. Henry G. Dalton, first vice president and director of Sheet & Tube, and a third man to whom the office belonged. This was George May, the senior partner of Price, Waterhouse & Co., leading firm of certified public accountants. Mr. May was saying that he thought a fair basis of exchange would be one and one-fifth shares of Bethlehem stock for one share of Sheet & Tube. "Now with reference to your outlook for business in the future, I can't say about that. You gentlemen will have to decide about it, and if there is either side that ought to have anything more than the other, then you will have to decide that among you."

This was the first suggestion of a definite program for the merger, but it obviously followed considerable work by Price, Waterhouse and this in turn must have followed some little discussion between the Bethlehem and Youngstown executives. Mr. Campbell testified that the decision to submit the proposition to Price, Waterhouse had been reached about January fifteenth, at his (Mr. Campbell's) third meeting with Mr. Grace. Going back of this, Mr. Campbell recalled having met Mr. Grace alone, near the end of December, at the Hotel Plaza in New York. "Grace asked me if I was committed to anyone else. I told him I had been talking about a merger to Inland, but I had advised L. E. Block (chairman of Inland) that we could not go through with it."

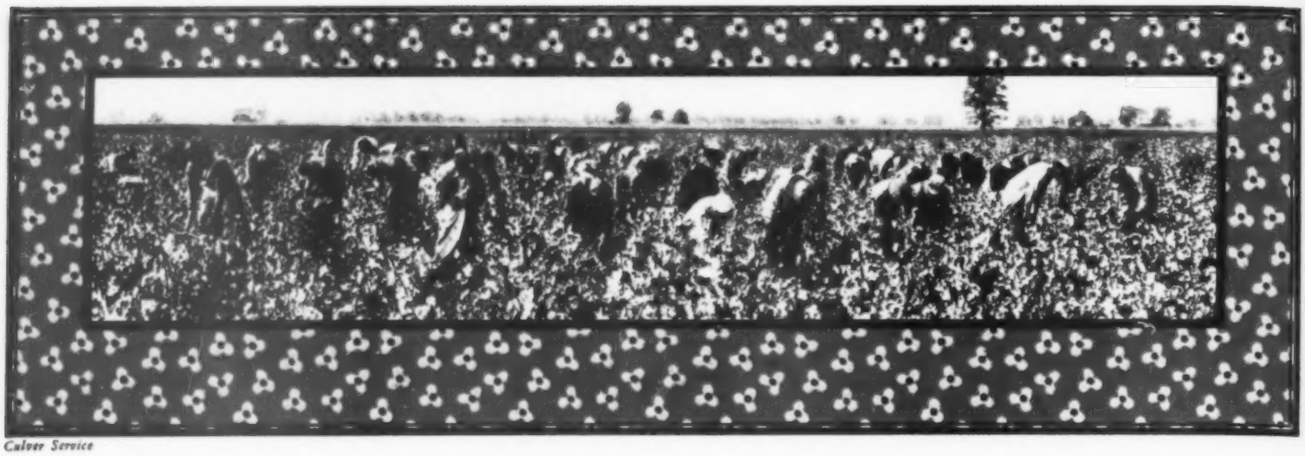
Mr. Campbell's testimony is here very illuminating. Mr. Eaton had quoted him as saying: "I haven't had very much to do with these negotiations. They were initiated by Mr. Dalton and have been carried on mainly by Mr. Dalton and Mr. Grace." But here he specifically declares: "This first meeting was at my instance. I did not consult anyone about it." And again, in a statement to the press, he reiterates: "Bethlehem has treated us fairly. They did not come to us—we went to them. I made the deal, I made the price, and I am for it, 100 per cent." This frank and blunt statement is at abrupt variance with the obvious belief on Mr. Eaton's part that the impelling force in the merger was not Mr. Campbell but Mr. Dalton. It should be noted that Mr. Dalton, in addition to being a director of Sheet & Tube, is also a director of Bethlehem, and is one of the chiefs of the Cleveland firm of Pickands, Mather & Co. This last company exists by mining ore for steel companies and then transporting it over the Lakes by boat and to the steel mills by rail. In 1929, Republic Iron & Steel paid Pickands, Mather $1,498,000 for such middlemen services and Sheet & Tube paid $20,955,000; the Pickands, Mather contracts with Bethlehem have never been made public. Mr. Eaton inferentially suggested that they were very large, declared he would like to know just how large, but admitted he had never asked the firm itself about them. It is possible to conjure up a picture of Mr. Grace using these contracts as a club over Mr. Dalton's head, but to put faith in the picture or to visualize Mr. Dalton as the compelling agent of the deal is to think Mr. Campbell a liar.

Mr. Campbell's own account of the mental processes which led him to Mr. Grace is not much more satisfactory. "There was pressure," he complains, "at all times—to merge with somebody. Pressure from stockholders and from Mr. McCleary, the president of the Republic Iron & Steel Company. Pressure was brought to bear by Mr. Eaton with reference to Inland and the other people with reference to the Republic." If this seems a curious reason for beginning negotiations with a company for which he had no very high regard (as he later admitted), it must be remembered that Mr. Campbell was an old man, that he wanted to unload the heavy responsibilities he had carried for so long, that Sheet & Tube was to him an intensely personal and private concern. He had run it for thirty years and had made it a great company. He had made Youngstown one of the most self-conscious communities in the country. In all these thirty years, while he became a vastly wealthy man, no other interest, no summer home or stable or yacht or old master, had ever challenged his deep absorption in his company and his city. It was impossible for him to abandon Sheet & Tube while merger talk was afloat, while he was being told that his company should expand, diversify, become national. Thus we see him, tired, tormented by personal problems, entering Mr. Grace's apartment at the Plaza to do one last turn for his company and win through to his own peace of mind.

Just how good a turn he did do for his company is of course one of the major points at issue in the controversy. Purnell (who, since the golf game, had become Sheet & Tube president) did most of the figuring with Grace and with Price, Waterhouse, and rejected the one and one-fifth for one basis. At a final meeting, also at the Plaza, Mr. Campbell, Mr. Dalton, and Mr. Purnell agreed to submit to the stockholders a merger plan on the basis of one and one-third for one. This was on Saturday, March first, the meeting lasting from noon until midnight. Everyone left with the feeling that the matter was settled, and Mr. Campbell seemed to be coming near to the end of his puzzlement.

March 3-6.—On Monday Mr. Dalton reached Cleveland. On Tuesday he telephoned Mr. Eaton, but was told by S. Livingston Mather (nephew of William G. Mather, son of Samuel Mather) that Mr. Eaton would not return from Florida until Friday. Old Samuel Mather, the chief of Pickands, Mather (and a director of U. S. Steel), perhaps the richest man in Ohio, of whom Newton D. Baker later said, "A million voices hail him Cleveland's first citizen," fell in heartily with the plan. His brother, William G. Mather,

[*Continued on page 106*]



Culver Service

Cotton: The World in Revolt

For a century the peerless aristocracy of one American was recognized. He was seven-eighths of an inch or longer. He was King Cotton. Now, throughout the world, his length is rivaled, his dominion divided.

TWO men stand by a bale of cotton. One deftly slashes two holes in it, extracts a handful of cotton from each. With a swift move of his practiced fingers he gauges the quality of both samples and then bids on the bale, always basing his price upon the poorer handful.

In textbooks this scene is often pictured, perhaps with some caption such as: "The Cotton Farmer Sells His Crop." But the characters are apt to be wearing the clothes of last century, and the text itself has not needed revision although other parts of the book have been changed from edition to edition.

Consider another scene. On a great platform stands the entire American cotton crop, 14,000,000 shaggy bales. Neatly piled as these bales are, a whole countryside has been razed to provide for them. None other than the Paul Bunyan of Northwest woods lore, he who with a careless swing of his hatchet created the Grand Canyon, he who built a bunkhouse so high that the top was hinged to allow the moon to pass, could have erected this platform and piled the cotton upon it. Nearby stand the growers, white landowners, negroes, tenants. In some cases they represent nearly all the rural manpower of their states, plus much womanpower. In all cases they are poor, continuously poor as only farmers can be. The buyer slashes for his two samples. Weary, needing money, the farmers agree to his price without complaint. A check, perhaps for $1,500,000,000, is given them.

No indifference would mark this transaction. Reporters, with direct lines to their papers, would give running accounts of it. Photographers would mingle with the crowds. The nervous stock markets of the world would fluctuate upon the size of the farmers' check. And, if each year the two samples were of poorer quality, if the price had a tendency to slump steadily, the American business world would await this annual deal with excited alarm. For while knowledge that one farmer, many farmers, received only $1,000 for what they expected would yield $1,500 is not in itself frightening, the actual sight of the united farmers of the cotton belt returning $500,000,000 poorer would be appalling.

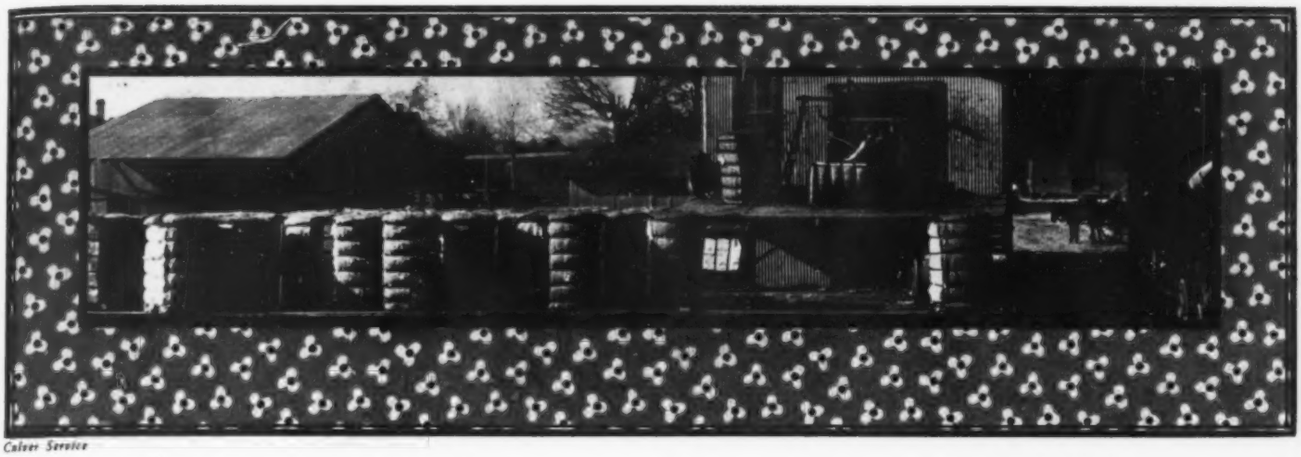
The reasons for the cotton farmer's steadily more grievous plight are two. First there is the deterioration of the American crop in quality. Alone, this would not affect the Divine Right of Near-Monopoly, which has enabled American cotton to be called King Cotton. But increased and carefully calculated competition from foreign nations has destroyed the monopolistic postion and with it the Kingship.

Just as it is impossible to overestimate King Cotton's part in the present scheme of things, it is impossible to overestimate his work in the creation of the structure. Every history of the industrial age commences with reference to Arkwright's loom, Whitney's gin (over which there was patent litigation for nearly a generation), the development of England's mills. Yet ruthlessness has marked King Cotton's conquest; his rule has been harsh. Cotton brought slavery to America; it created the laboring class. Rebellion, poverty, war have marked its march. Perhaps these may be entered in the world's balance sheet as "Deferred Charges Incidental to Development," but they form an item that has taken years to write-down and one that in centuries less composed would perhaps have made the plant an outcast, an accursed thing.

Now, with the development over, with King Cotton's domain threatened, a grim heritage remains. For King Cotton has not helped the thralls that blindly serve him. The farmer, considered as the Collective Farmer, is a grossly maladjusted person in an industrial era. Whereas production in industry is controlled, farming remains uncontrolled and apparently uncontrollable. Of all the essential pursuits, it alone remains a gamble. Thus is the most hazardous of undertakings left in the hands of the person least able to stand the losses, least able to use the rare but tremendous winnings that Fortune's wheel may bring him.

To the American cotton farmer some things are understandable. When a late frost, an early frost, too warm a spell or too cold a spell destroy his crop, he submits to the mercy of cosmic forces. When weevils swarm over the farmer's bolls, when lousy things infest his plants, he is philosophical in the face of a universal evil.

But one thing that angers the farmer beyond all reason, that torments him into strange outcrys of fury is the fluctuation of prices. That prices are low when he sells, high after he has sold, low when his crop is bountiful, high when it is poor, he attributes to malevolent forces plotting against him, to a giant conspiracy of moneyed forces. Defiantly he and the politicians who represent him and the committees the politicians appoint all cry "manipulation." But while manipulation plays only a small part in these fluctuations, it is here that the first step can be made to aid the farmer. The government has attempted to do it with the creation of the Federal Farm Board, which so far instead of stabilizing prices may have been a partial cause for such swings as those which carried July cotton from 20 cents in September to 14.22 in March back to 16.50 on the first of May. How this will turn out, no man should prophesy. Yet some have, and Will Clayton of Anderson-Clayton, perhaps the biggest concern in the cotton market, has been vigorous in his protests against governmental interference. But even without the Farm Board, steps have been made to improve



Culver Service

the awkward and violent interreaction of supply and demand that commences when the first farmer stands by to see his bales sampled, ends only after the last bale is warehoused. Giant coöperative agencies bargaining for their members, standardization of grades and quicker communication of prices all work to help the farmer in this trouble.

Yet however baffled the farmer is by these conditions, he is absolutely aghast to learn that American mills buy foreign cotton, foreign mills buy less American cotton every year. Here something seems wrong with the government, some oversight on the part of the great paternal government that sends him circulars on how to discomfort the weevil, how to manure his fields. Surely, he reasons, the government should put a rapid end to so unpatriotic a state of affairs.

There are signs of a new and virile leadership in the South which will accept the challenge of world competition and endeavor to restore to King Cotton some of his lost domain, or at any rate save the half of the cotton world which still remains his. Outstanding among such leaders is Oliver Max Gardner, Governor of North Carolina, a powerful six-foot personality. An able politician and a lawyer, he is also respected for having been a great footballer and having made a million or two in the North Carolina cotton textile business. An important step he recently made to help this industry is briefly described under *Faces and Facts* on page 142. While his work in farming may not have produced great monetary results, it has been just as convincing. In 1910 he bought a 150-acre farm on credit and has been growing things ever since.

Cleveland County, North Carolina, which boasts of the Governor as its "favorite son," has prospered phenomenally under his influence, and its cotton farmers are disappointed when their crop fails to fetch at least $7.50 a bale above average. Last year this county laid claim to a world's record for cotton-per-acre—64,000 bales from 79,000 acres. If every Southern cotton acre could yield cotton in this quantity and quality, the rest of the world might quit the race.

In the succeeding article, the Governor sets forth the serious threat of world competition and proposes to meet the challenge. For the benefit of non-cotton folk, FORTUNE follows on page 76 with elementary facts concerning this subject.

Cotton: Long Live the King

A powerful Southerner, O. Max Gardner, writes with little sympathy for proposals of abdication. Threat of ruin is manifest. But the South can regain its crown by raising more, especially more aristocratic cotton.

(*The article which immediately follows is contributed to* FORTUNE *by the Hon. O. Max Gardner, Governor of North Carolina.*)

THERE is perhaps no area of comparable size in the world whose very civilization has been conditioned by a single plant as the civilization of the South has been conditioned by cotton. I am reminded of Henry W. Grady's classical characterization of this situation:

> What a royal plant it is. The world waits in attendance upon its growth; the shower that falls whispering on its leaves is heard round the earth; the sun that shines on it is tempered by the prayers of all the people; the dews that descend from the stars are noted . . . Its fibre is current in every bank.

The present-day South, in the struggle for an adequate return from labor and investment in cotton growing, has a bigger problem and a bigger issue than that of merely adjusting production to demand. It has the problem of recapturing lost position in world markets. And there is an even more insistent, though less exalting, need of at least retaining our present status.

Cotton is the one great American crop with demand centering primarily in foreign markets. Twenty years ago the world mills outside of the United States consumed approximately 11,000,000 bales of cotton, and 70 per cent of it came from this country. During recent years foreign mills have been consuming approximately 18,750,00 bales, and they have averaged getting only 47 per cent of it from this country. We have not only failed to share in the production for this increased foreign consumption, but we have actually lost a part of our old market.

World students of the cotton situation are of the opinion that the trend of increased production abroad is likely to continue unless it can be thwarted by an improved quality, which must be accompanied also by a lowered cost of production in this country. A little further along in this article I shall take up a discussion of what our competitors are doing and what they are likely to do, but I first wish to call attention to some factors which have contributed to our decline from the peak of cotton production supremacy. They are factors, too, which have at the same time been both meat and drink to our competitors abroad. We too often confuse the real cotton destiny issue with the cotton destiny symptoms of the day. As I write this article we are in the throes of one of the periodic cotton acreage reduction campaigns. Before me is a poster which argues eloquently for a reduced acreage this year. Here are the pertinent facts of this poster:

> From the 1923 crop of ten million bales, two bales brought $300.
> From the 1924 crop of fourteen million bales, two and one-half bales brought $300.
> From the 1926 crop of eighteen million bales, four and two-thirds bales brought $300.
> In 1930 ? bales will bring $300?

The clear inference of this poster is that the solution of the cotton problem is a very simple one: that we need merely to produce less in order to get more money. Unfortunately such a remedy, while it undoubtedly would prove a

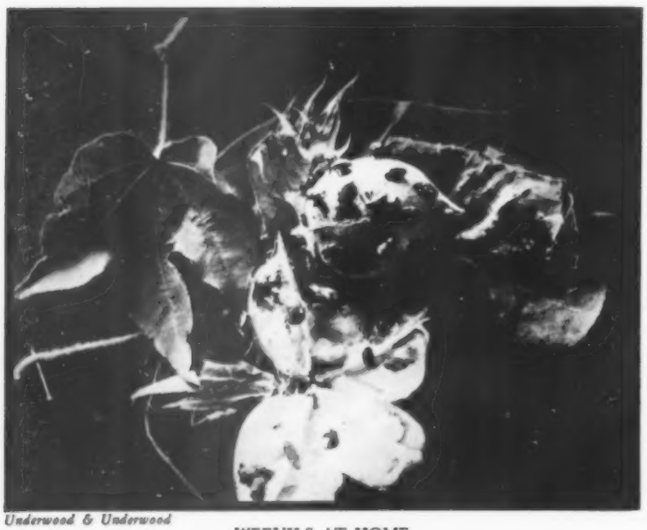
[*Continued on page 73*]

XUM

Culver Service

FEW thanks are given to pests and still fewer monuments. But in Enterprise, Alabama, once a cotton-growing town, stands a statue (shown above) to the boll weevil. For the weevil, oddly enough, taught the planters of Enterprise a profitable and economic lesson. So often did he destroy their cotton that, in desperation, they finally planted peanuts, which no weevil attacks. And by so doing they made money. Not always is such a procedure wise, but in this case it was. The citizens of Enterprise do not forget and are not ungrateful and today their monument prominently proclaims the legend they inscribed thereon:

IN PROFOUND APPRECIATION
OF THE BOLL WEEVIL
AND WHAT IT HAS DONE
AS THE HERALD OF PROSPERITY
THIS MONUMENT WAS ERECTED
BY THE CITIZENS OF
ENTERPRISE, COFFEE COUNTY, ALABAMA



Underwood & Underwood

WEEVILS AT HOME

Weevil

IF YOU starve a boll weevil, it may eat an apple or a banana. If you spray its food with calcium arsenate, it will probably die. If you prod one, it will curl up its legs and play possum. If you leave two of them together and they are of opposite sexes, they are able to beget a family of 12,500,000 in eight months. If you are Carl Sandburg and hear of them, you will think of a poem beginning, "Oh, de boll weevil am a little black bug. Come from Mexico, they say . . ." And if you are Carl Sandburg, what you heard about the Mexican origin is correct.

The weevil left Mexico, in fact, in 1892, and went to Brownsville, Texas. Whether it flew, which is possible, or whether it rode on imported seed cotton, which is equally possible, or whether it walked, which is unlikely, nobody knows. Or cares, any more. For there is not a state today within the cotton belt which does not harbor it. Like the Mohammedan, the weevil turned to the east, and his journey from Texas to the Atlantic coast seemed to take only the time of a couple of genuflections. When he got to the Carolinas, he hopped to the islands off the coast and destroyed the finest cotton ever grown, the Sea Island, of which no more is produced anywhere in the United States today. He has never taken, though many wish he would, a final obliterative hop into the Atlantic.

The weevil is a bug, a quarter of an inch long, and half of it is snout. Like many a human being, its period of greatest activity is from nine o'clock in the morning to five in the afternoon. But unlike most humans, its activity seems mainly concerned with reproduction and with its well-known predilection for the destruction of cotton. The female's great joy is to puncture with her snout an unopened boll of cotton. Into the cozy niche she deposits her eggs, and in about ten days a family is hatched and a cotton boll ruined. The youngsters need no training; modern, they know. As soon as they physically can, they saunter forth to do exactly as their parents did before them. Thus in brief runs the tragedy of cotton. The destruction is the more complete because the female is choosy. She will not deposit her eggs where some other female has already done so. Only when the season is well spent and all the bolls of a plantation are inhabited will she bow to the necessity of overpopulation and allow her progeny to share its home with that of another. In winter, the weevils rest in cracks and piles of rubbish, by the edges of forests and in Spanish moss. The average life of a weevil is two months, though one, mentioned but unnamed by all authorities, is known to have lived eleven months.

Of course, it is not to be supposed that the weevil is allowed to live and multiply in peace. The most gallant but generally ineffective gesture against it is made by the cotton plant itself, which sometimes heals the wound that the female has made and in so doing crushes to death the larvæ deposited therein. Most dangerous to the life of young weevils is the sun. Its rays in a few minutes can destroy larvæ, exposed and fallen to earth in an infested square of cotton. Forty-five insects and twelve species of ants eat them, and birds are occasionally interested. Man's device of destruction is calcium arsenate. His last resort is early cotton, which will blossom before the weevil can plunge its eager nose into the boll. But early cotton is rarely the best. Cotton itself contrives to defeat the planter's desire to grow good cotton. For cotton's pollen is easily distributed by wind or insect. Even if the weevil has spared a farmer, not all of his fields are of equal excellence. And last year's nearly perfect field may be contaminated this year by the degenerate pollen of an inferior field next to it. Or by a neighbor's miles from it.

There is, of course, a school of defeatism whose members argue that in every weevil resides some good, that without him the farmers' lives would be dull, their crops too bountiful. Yet, even were the weevil exterminated, Nature and the Farmer would sign no treaty of peace. Between planting and harvest a host of maladies and pests besiege Cotton. Of the former, planters dread most cotton wilt (or black heart or frenching), root knot, anthracnose, rust, boll rot, core shin (or seedling rot). Of North American pests, second deadliest is the pink boll worm (against which the pot-bellied mite louse, or *pedic uloides ventricosus*, and the United States wage endless war). Others are the cotton caterpillar, the grass worm, boll worm, wire worm, and the red spider. In Egypt there is the spiny boll worm; in the West Indies the stainer (or sucking bug), the bronze beetle, the red maggot; while Africa, appropriately, must fight the dusky bug. But deadliest is the exclusively American boll weevil.

palliative to a distressing symptom, would serve also to aggravate the fundamental cause.

Our cotton troubles tie on to the erratic yield curve and greatly increased cost of production under boll weevil conditions. During the past fifteen years the national cotton yield has only twice exceeded 170 pounds of lint to the acre. Twice also it has dipped below 130 pounds. On the other hand, during the twenty-five years from 1890 to 1915, only three times did the cotton yield fall below 170 pounds to the acre, and nine times it exceeded 190 pounds. Not only has the coming of the weevil brought about a much lower acre yield, but this yield has been secured at a greater cost per acre and a much greater cost per pound of lint. Furthermore, the weevil has also caused a deterioration in length of staple. Early in the weevil fight it was found that a type of very short staple cotton which rushed through to quick maturity would suffer less damage than a more slow-growing better staple sort. Although the early-maturing trait can now be had in better staple cotton varieties, use of the old sorts with extremely low-grade fiber still persists and has now become a serious detrimental factor in our international cotton trade. Government survey last season disclosed 3,000,000 bales, or more than one-fifth of our production, to be fiber so short as to be nontenderable in filling futures contracts.

The beginning of expansion in cotton production abroad may be attributed to the high prices prevailing toward the close of the War. Added impetus was given the foreign production movement by the very short American crops during the three years 1921–1924. Our production during this three-year period averaged less than 10,000,000 bales per year. The resultant high world price on the one hand, and on the other the fear of foreign spinners that a raw material supply might be jeopardized started a trend of foreign competition which has continued to expand.

Competition in every direction

Since the 1921-22 crop, cotton production outside of the United States has increased approximately 4,000,000 bales. The expansion has been mainly in India and Russia, and to a lesser degree in Africa and South America. Along with this increase in production there has come a marked betterment in quality of the staple. It is estimated that 40 per cent of the total foreign growth of cotton, or approximately 4,400,000 bales, now falls in the staple length group ranging from $\frac{7}{8}$ to $1\frac{3}{32}$ inches, in direct competition with the bulk of our export cotton.

Since 1921-22 the Russian crop has climbed up from 43,100 bales to 1,325,000 for 1929-30. It is reported that only government certified seed may be used by the Russian farmer, and that in this way the quality of the Russian crop is kept to a uniformly high standard.

One thing holding back still more rapid development of cotton growing in Russia is the lack of interregional transportation and trade. This economic isolation of Russia's potential cotton areas makes it necessary for the cotton farmer to produce his own food and supplies and prevents greater specialization in cotton culture. It is therefore possible that Russia's projected transportation facilities will be an important factor in hastening the expansion of her cotton program.

In India, where there has been marked increase in cotton production, there has also been marked improvement in staple length. Approximately 40 per cent of the present crop falls into the class of seven-eighths inch and better staple. During the past decade India has made an 85 per cent increase in this type of cotton and only a 30 per cent increase in the lower grades. The India crop is now centering around a production of only slightly less than 5,000,000 bales of 478 pounds net, as compared with a normal pre-War production of between 3,000,000 and 4,000,000 bales. Considering the fact that the India crop occupies an area of between 25,000,000 and 30,000,000 acres and now yields an average of less than a hundred pounds of lint to the acre, it is apparent that a small increase in acre yield on this huge acreage would mean vastly more cotton. And the British pressure which has already resulted in a bettering of quality may become a factor of no small importance in bettering yield.

Cotton is gaining a hold in many places in the great continent of Africa. The old Egyptian center of production has shown some expansion, having increased production from less than 1,500,000 bales pre-War to 1,640,000 bales for the past season. The Anglo-Egyptian Sudan has increased from 14,000 pre-War to 164,000 bales last year. In more than a dozen other centers of production in Africa the cotton crop, though still small, shows an expansion trend which may be considered significant. In Uganda the crop has increased from a pre-War yield of 20,000 bales to more than 165,000 last year. Tanganyika has increased its output nearly 200 per cent, though, expressed in bales, the 23,000 output is not yet alarmingly large. The Union of South Africa, which before the War produced less than one hundred bales, has worked up to a 10,000 bale crop. Nigeria is credited last year with 28,000 bales. The same country produced less than 10,000 bales in pre-War days.

In South America numerous countries show a cotton expansion trend, and the annual production has climbed up from a little more than a 500,000 bale crop for pre-War days to just a little less than 1,000,000 bales last year. In various places in Oceania cotton growing, unknown before the War, has become well established.

It is clearly evident from even the most cursory glance at world cotton statistics that this country is in no position to act as if it had a monopoly on cotton production. Nor are the Indian and Russian farmers alone in their efforts to produce a superior fiber. For the past decade cotton specialists from every would-be producing country of the world have swarmed over the South. They have not only studied our best production methods, but they have secured large shipments of our very highest quality seed and have organized its introduction and use The great authority, John A. Todd, of the Liverpool School of Commerce, very aptly summarized the situation:

Not only are the world's supplies other than American increasing steadily if slowly in quantity, but also the great bulk of the new supplies is of a quality at least as good as all but the

By Ewing Galloway, N. Y.
SOME OF THE 320,000 BALES STORED IN NEW ORLEANS' PUBLIC WAREHOUSE

© Publishers Photo Service
AN ARISTOCRAT STARTS ABROAD. LOADING COTTON AT THE PORT OF CORPUS CHRISTI, TEXAS

Courtesy Delphic Studios

best American, and every one of the countries is doing what it can to produce the best cotton it is capable of growing or to improve the varieties formerly grown. Contrast this with the position in America where the history of the last twenty years has been one of almost steady deterioration in the average quality of the crop.

Our cotton situation with reference to world markets offers some interesting contrasts with wheat, of which commodity we are normally the second largest exporter in the world. Canada ranks first, shipping out from 300,000,000 to 400,000,000 bushels of wheat annually. Our exports for the past five years have varied from slightly over 100,000,000 to slightly over 200,000,000 bushels, and for four years of the past five have exceeded the exports of Argentina, the third largest exporting nation. We are likely to continue heavy wheat production because the bulk of our crop is produced with power-operated machinery of such an efficient type that hand labor in the normal sense of the word has almost been dispensed with. The great bulk of the crop in commercial wheat-producing areas is also planted with the improved varieties which have been developed by scientists on the basis of yield, quality, and maximum resistance to disease. The head of the cereal department of the University of Nebraska recently remarked that fully 90 per cent of the wheat planted in that state was put out to varieties developed at that institution or at similar institutions in neighboring states. The story is largely the same in the other great wheat states of the West.

It is true, of course, that it is simpler to maintain a wheat variety than to maintain a cotton variety. This is true because the flower of the wheat plant is fertilized with its own pollen. The cotton flower, on the other hand, is fertilized by any pollen the bees may happen to bring to it or that may be wafted on a fortuitous breeze, and under ordinary farm conditions, cotton more than two years removed from the special plant breeder's care has shown marked deterioration.

Cotton growers need to take their cue from the wheat men in the important matters of rigorous care in the use of seed for planting and striving for greater efficiency of labor in the whole production process. Labor cost today not only represents over 70 per cent of the cost of producing cotton, but it is largely hand labor which utilizes but little mechanical power.

World demand for cotton seems in nowise threatened by the increase in the use of rayon and other fabric material, nor can the present depressed state of the raw cotton market be attributed in any measurable degree to the rise in the use of these new fabrics.

Whatever may be the decline in per capita consumption of cotton and other textiles as coming from the radical changes in fashion and habits of dress during the past two decades, it is apparent that the increased use of cotton in industry and for other purposes has more than offset these changes. Recent studies by the Cotton-Textile Institute show that per capita con-

sumption of cotton cloth is nearly 20 per cent greater than it was thirty years ago. While population has increased at an average rate of approximately 2 per cent a year during this period, the analysis indicates that consumption has increased at an average rate of more than 3 per cent annually.

New emphasis on style has enhanced the fashion importance of cotton. Sales of cotton fabrics for wearing apparel have shown a substantial increase, particularly during the last few years. More cotton cloth was sold as piece goods and in ready-made dresses in 1928 than in 1927. A substantial increase was also noted in 1929.

A very large proportion of the entire output of cotton cloth is now used for so-called industrial purposes. By and large, this is probably the biggest group of uses which the cotton industry has at the present time. It includes the enormous amounts required annually in the automobile industry, in the electrical industry, for bags and bagging, agricultural uses, etc.

Rayon is the young and rapidly growing new member of the textile family. It is quite apparent, however, that far from having an adverse effect upon cotton, rayon is a staunch ally much used in combination with cotton and other textiles. Many cotton mills are large users of rayon, and by combining these two it has been possible to develop attractive new fabrics with style and design that are particularly effective used either for decorative purposes or for wearing apparel.

Challenge accepted

The danger to the American cotton grower, therefore, is not one of restricted but rather one of expanded world demand. If foreign countries find themselves unable to get American cotton of a grade and at a price and in volume to fill their needs, they will bend every effort to develop an adequate supply elsewhere. Cotton has ceased to be a strictly American commodity.

While the cotton farmer of this country does occasionally need the support of some strong price stabilization force to prevent the devastating effect of such ruinous times as 1926, when cotton dropped below ten cents a pound only to snap back twenty cents the following year, he needs, even more insistently and needs all the time, stronger state and national government support in developing such technical methods of production as will result in a quality product raised at a profit and still at a price which will discourage the growing foreign competition.

The development of coöperative marketing is apparently leading to the opportunity of every grower selling his crop on a grade and staple basis in lieu of the old absurd practice of the country buyer paying merely the average community price for all cotton and thus penalizing the man with the superior staple crop. But, in addition to this better marketing plan now in sight, the state and the nation must join hands with and support the reputable plant breeder in an effort to make available cottonseed which will produce quality cotton.

There is a new school of agricultural thought in the South willing to accept the challenge of the world in this matter of cotton supremacy. This school holds that cotton production needs a new sort of exhaustive research and then needs to coördinate activities of all existing agencies in bringing this research to bear on the cotton farm. There are those who hold that the old South could double or perhaps treble its acre yield through developing new style legumes adapted to humus-deficient lands. It is perhaps true that the South as a whole has put most of the stress of its scientific effort on the largely fatuous task of developing alternative industries rather than on effort to safeguard the already dominant crop, cotton. In view of the present world situation, it should be easily apparent that if we dally with the problem by merely planning to produce what the world will take from us at a fair profit, we are likely to find this amount decreasing decade by decade, with an overproduction problem following us all the way down the line to ruin.

Courtesy Delphic Studios

A LAZY RIVER, AND ON PAGE 74, A LAZY PICKER, REMAIN NOTICEABLY DETACHED FROM THE FRENZY OF WAITING MARKETS. BOTH BY THOMAS BENTON

The Plant Man Wears

Its Seed & Flower & Lint . . . And How a World Tortoise Gains on a U. S. Hare.

I

The chief use of cotton is for clothing. Of the world's 1,650,000,000 people, only one-third are in that unhappy state, "completely clothed," leaving a tremendous potential market. It was an understanding of this that prompted the witty Mr. Wu Ting Fang, visiting the cotton fields in 1901, to remark that if each of his countrymen would add an inch to his shirt, China could consume an additional 2,000,000 bales.

II

And 2,000,000 bales would be no mean matter, since the world's production last year came to less than 26,000,000 bales. In thousands of bales, the leading producers last year were:

United States	14,477
India	4,915
China	1,750
Egypt	1,628
Russia	1,208

III

In fact, a million bales is easier said than done. Although bales differ, your usual United States bale is a trifle less than 500 pounds of cotton, which is the product of one crack acre or of three and one-third ordinary acres. At the dock ready to be launched into a thousand ships, 1,000,000 bales (at seventeen cents per pound) are worth roughly $80,000,000. Multiply that by fourteen and you have a rough valuation of a U. S. crop.

IV

But even as the drops that make the mighty ocean, so are the little lints that make King Cotton's crown. If each lint is seven-eighths of an inch long, the Crown is satisfied; if longer, the Crown exults in great prosperity; if shorter, the Crown totters on the head of an insolvent monarch. To find the lint, seek the mother.

V

The cotton plant is a small, shrublike thing, usually three to four feet high. A wild perennial cotton, if left alone, would reach a treelike state. Only for the sake of commercial convenience is it killed each year and replanted. In South America, giant tree cotton of six to ten feet is found.

VI

Like all plants, cotton has a flower. And theoretically it could flower all season. But unlike many plants, it is an unmistakable, beautiful flower. In most American cotton, the flower is white or a pale yellow when it opens, but by sunset of the first day has changed to an attractive pink hue. On the second, and usually the last day of its life, the flower is a deep red. Some foreign cotton flowers open as bright yellow or brilliant red. It is after the flower has died that the boll is formed, containing seeds. Each seed has about 10,000 hairs attached to it in order that it may be blown far in the wind.

VII

These hairs are the lint, which is what is usually meant by cotton. In the cotton gin, these hairs are removed from the seed. Shorter hairs or linters are taken off in a second process, and the seeds are then used either for replanting or are crushed, their hulks turned into cottonseed meal, their insides to cottonseed oil.

VIII

How fine a fabric perfect cotton forms is well described by what a traveler in India wrote in his diary in 1600: "If a person puts such garments on his body, it is visible just as if he were naked. The merchants are not allowed to buy this cloth. All of it must be delivered into the hands of the King, who has garments made of it for the inmates of his harem and the wives of noblemen . . ."

© Publishers Photo Service
THE KING IN HIS PRIME

IX

In the United States nearly all cotton is planted by machine, the cottonseed being dropped into holes drilled in little ridges that have been thrown up about three or four feet apart. Usually from fifteen to thirty pounds of seed are used in planting an acre. In Egypt, where the soil is hard and the top often baked, generations of farming have taught the planters that it is wise to include a bean seed in each hole, for, tough and vigorous, the bean stalk has no trouble in emerging. Ten days after planting, the farmer can usually inspect the first green cotton sprouts, and then commences his long fear lest frost come and destroy his potential crop.

X

Presumably the largest single unit cotton plantation is that of the Delta and Pine Land Co. of Scott, Mississippi, where at headquarters they have 15,000 acres of cotton. Nearby the company has two other units of about 8,000 more acres. At 150 pounds an acre, that makes a theoretical average of 3,450,000 pounds. At ten cents per pound, that makes only $345,000. Few cotton men aspire to such enterprises. Size, in agriculture, has built few fortunes.

XI

The most costly cotton growing operation is picking, usually commenced from August first in the South to early September in the North, and finished sometime in December. The work is done by hand, each boll's contents plucked and tossed into a sack. Most of the work is done by negresses and children in the South, Mexicans and Indians elsewhere. Women pickers refuse to work Saturdays and Sundays.

Great will be the revolution in cotton methods and prices when a picking machine is perfected. Many have been invented; none has been really acknowledged as satisfactory. The International Harvester Co. has several times been said to be on the verge of success but still labors on the problem. And the American Cotton Picker Machine Co., headed by wily William Crapo Durant is now selling a machine.

XII

In almost all sections of the cotton belt, cotton is sold after it has been ginned. Most of the ginneries are public, charging by the hundred pounds of seed cotton, with additional items for the bagging and ties used in making up bales. As the lint comes from the gin, seed and dirt extracted, it is pressed into bales covered on two sides and on the ends with bagging. It is then

tied with six steel bands. The bale is usually fifty-four inches long by twenty-seven inches wide and forty-five inches deep, is pressed at the relatively low density of twelve or fifteen pounds per cubic foot, which gives it a weight of around 500 pounds. Then, at interior markets and concentration points, it is compressed at the high density of from twenty-two to thirty-five pounds per cubic foot, reducing the bale's size by half.

Every prospective buyer hacks at the baling, takes out a handful of cotton. By the time the bale reaches foreign markets it is ragged and dirty, exciting a feeling of impotent disgust at American methods.

XIII

The journey of cotton from the gin to the mills is marked by many changes of owners. The grower usually sells right after it is ginned to a local buyer who may either buy from his own firm, a representative from a larger one, or a traveling buyer. From this primary market it travels to the large interior markets such as Charlotte, North Carolina, Spartanburg, South Carolina, Macon, Georgia, Montgomery, Alabama, Greenwood, Mississippi, Pine Bluff, Arkansas, Shreveport, Louisiana, Fort Worth, Texas. In these centers the firms are usually large and have extensive connections. They grade the cotton and arrange it in uniform lots, ship it off to mills in the North or for export. In order of rank, the big export markets are Houston, Galveston, New Orleans, Savannah, New York.

XIV

Just as *Genus Canis* signifies the beast called Dog, so does *Genus Gossypium* signify the plant called Cotton, of which there are as many varieties as there are kinds of dog. And just as Nature conspires against thoroughbred dogs from remaining thoroughbreds, she is always at work to destroy the aristocracy of pure cotton strains. When plantations were large and had private gins, cotton varied little from year to year. As soon as smaller farms and public gins appeared and as soon as new varieties of cotton were tried by enterprising farmers, a great cross-breeding began in both the gins and the fields. Ignorant that he himself had set these forces to work, the farmer at first blamed this upon inherent vice in cotton. And so he formulated the most damaging hypothesis in all agriculture: "Cotton runs down in three years; new seeds must be imported."

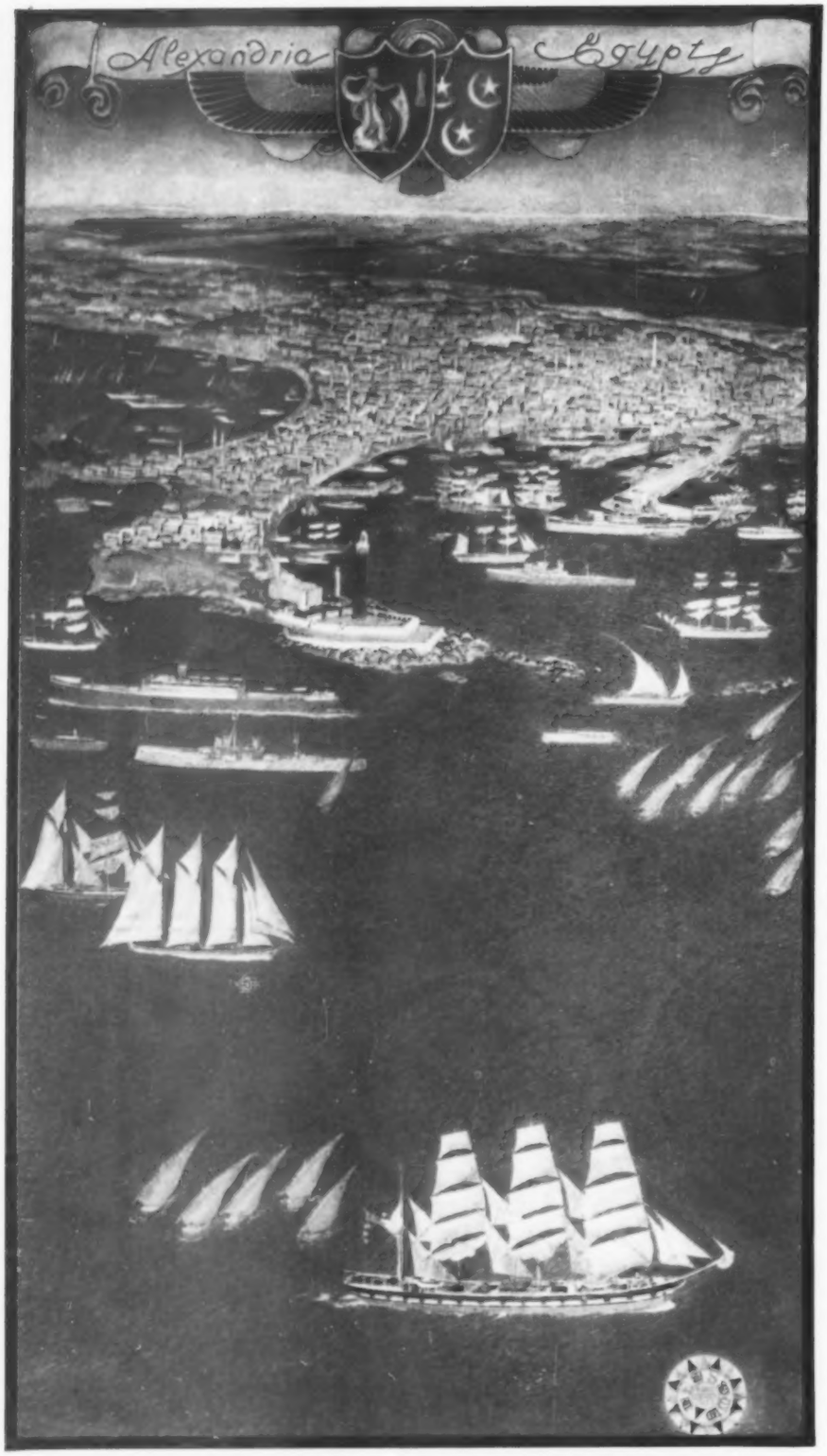
To combat this degradation, certain growers began specializing in seeds. But however fine the seed, one neighbor with a different variety, one mix-up in the gin, and all again was mongrelized. The government has suggested "one-seed communities," a commendable idea. But communities have been difficult to organize, and many of them have seen all their labors undone by one moment of carelessness. Yet the future of American cotton, in all its grim banality, lies in the seed.

XV

Outside of the United States more and more cotton is being grown, threatening, as we have seen, King Cotton's crown. The following are

Courtesy N. Y. Cotton Exchange

DIGNITARIES OF THE CITY ARE THE PORT COMMISSIONERS OF NEW ORLEANS, SUBSTANTIAL CITIZENS OF ONE OF THE NATION'S GREAT SHIPPING POINTS. TWELVE RAILROAD LINES HERE CONVERGE, AND HERE, IN 1880, WAS INAUGURATED THE FIRST MARKET FOR TRADING IN COTTON FUTURES. A GREAT COTTON EXPORT PORT, NEW ORLEANS ALSO RECEIVES A LARGE SHARE OF BANANA IMPORTS. THE PORT IS NOT ACTUALLY AT THE MOUTH OF THE MISSISSIPI, BUT 107 MILES AWAY, AND LIES UNDER THE LEVEL OF THE GULF



PROBABLY THE MOST POLYGLOT CITY OF THE WORLD, ALEXANDRIA IS TODAY, AS IT WAS WHEN THE HOUSE OF PTOLEMY REIGNED, THE LARGEST AND BUSIEST PORT OF EGYPT. IT IS THE SEAT OF THE ENGLISH CHAMBER OF COMMERCE AND HANDLES MORE THAN 80 PER CENT OF EGYPT'S EXPORTS AND IMPORTS

notes on the crescendo of activity in rival nations:

EGYPT

Along the fertile Valley of the Nile many plants thrive, but of these none has brought Egypt more wealth and fame than cotton. When cotton was first planted in this region is not known, but it was long ago, even by Egyptian standards of the past. It was, however, the Civil War with the resultant high prices for cotton that gave the plant its biggest commercial impetus.

In 1861 the first "futures" market in the world was started at Alexandria, and Egyptian cotton has continued to play a big part in the commodity's world commerce. Complaints have been heard that the crop is deteriorating. Some people explain this by saying that the dams prevent the silt from flowing over the land and enriching it annually. Others claim that too much irrigation has water-logged the soil. But the most important cause seems to be mixing cotton in baling, and this rapidly is being remedied.

Although it once seemed that Egypt's long-staple cotton was a monopoly, the substitution of Upland cotton from America was found practicable. Egyptian cotton remains, however, the best for many uses, including tires, and the world will always pay well for all Egypt can produce. Last year more than 1,000,000 bales were shipped from Alexandria, England taking 369,000 and the United States 192,000.

SUDAN

While England, in corporate language, has a substantial but not controlling interest in Egypt, she does have investments with certain conversion possibilities that could give her control in an emergency. And for this reason England has to a large extent sponsored the development of Egyptian cotton. However, the finest example of British crop development is to be found in the Sudan, wholly controlled by England and sacred to the memory of Kitchener of Khartum.

Adjacent to Egypt, watered by the upper Nile, the Sudan has tremendous possibilities as a cotton producer. The crop is handled with carefully planned efficiency. The government supplies the water and land, in return receives 35 per cent of the crop's gross value. The Sudan Plantation Syndicate furnishes the minor canal system (consisting of more than 10,000 miles), carries out the first ploughing, supervises cultivation, provides ginning and storage facilities, attends to marketing, and for these many services is given 25 per cent of the gross value. The rest, of course, goes to the native tenant, whose plot has been carefully laid out for him and is on the average about ten acres. The ground is worked by powerful steam-driven implements, the cost of these operations being deducted by the syndicate from each tenant's profits. Cotton in this region is a winter crop, being planted in July, picked from December to spring.

The development of Sudan did not come about by chance, but is part of a careful policy by which Britain is attempting to become independent of American cotton.

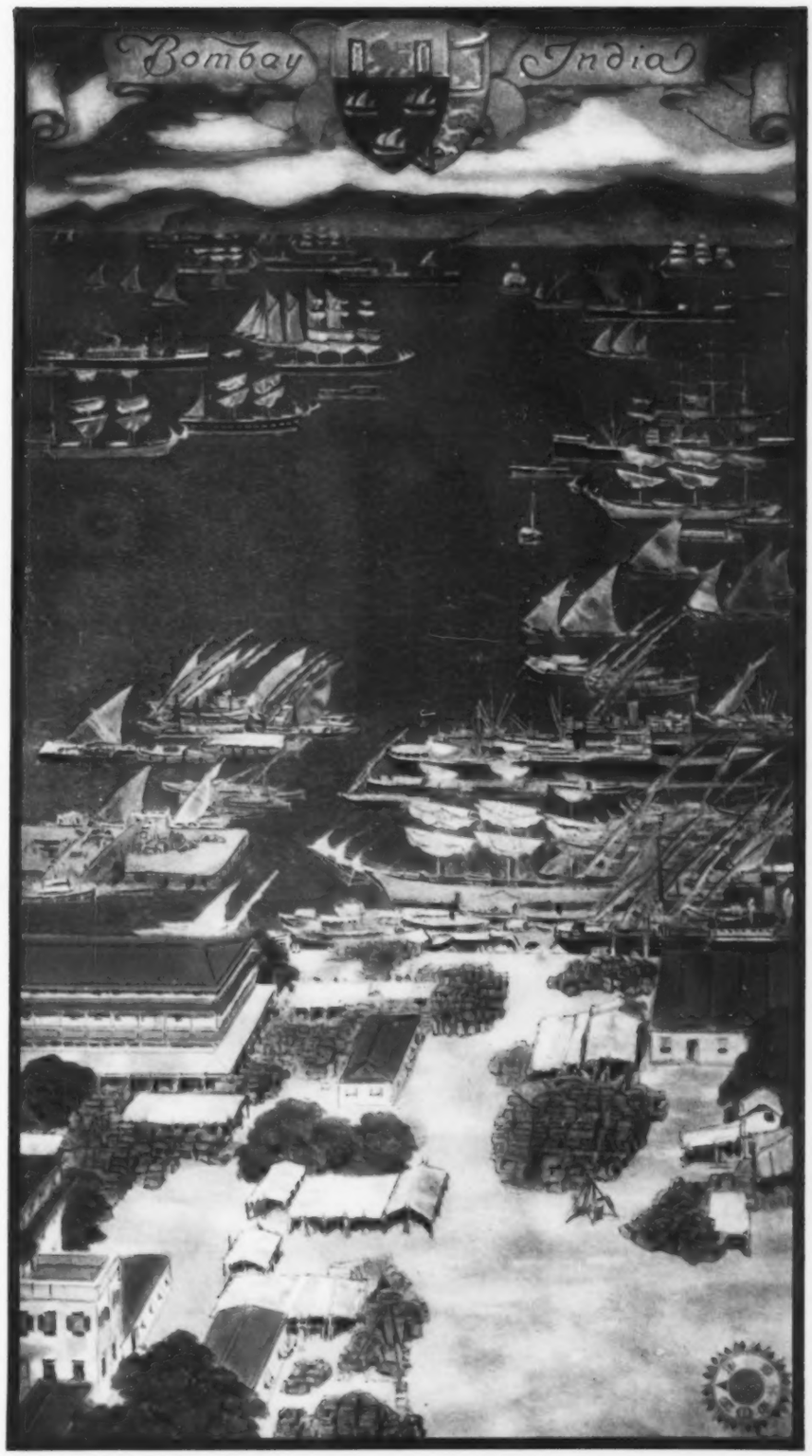
The first organized step in this direction was the formation of the British Cotton Growing Association in 1902. In 1921 a new aid to British cotton was created, of significant name: the Empire Cotton Growing Corp. Given a grant of nearly 1,000,000 pounds sterling and conceded an additional levy of 6d on each bale of cotton purchased by English spinners in this country, the corporation has had vast funds at its disposal. With these resources it trains men, does biological research, advises on transportation problems, and in general encourages the culture of cotton. So, just as carelessness, lack of organization, and stupidity have caused King Cotton's troubles in America, the opposites of these vices have troubled him from without.

INDIA

One of the brightest jewels in the Empire's crown, but one of the most poorly set, is India. And in India, Britain has been vigorous in the arduous task of bettering the quality of cotton. Attempts in this direction have been many, probably starting with the experiments of the East India Company. The real move began, however, in 1904 when the government acted to remove the farmer from the rut wherein he had slept for many a monsoon. Credit facilities were provided, government control of seed farms inaugurated, selling methods improved, and a somewhat greater state of efficiency placed over some parts. While some Indian farmers, as in every country, are most indolent fellows, others show amazing willingness to coöperate and to work under discouraging conditions. The future of Indian cotton is, unmistakably, encouraging. The crop now threatens to displace North American cotton in the Japanese markets, and while Indian cotton reaches Great Britain in only extremely small amounts, there is every indication, as Governor Gardner points out, that a sudden rise in this direction could occur.

Severe problems still remain. Indian pickers are careless and greedy, throwing stones and earth in with the cotton, plucking ripe and unripe bolls with little care. This is attributed to the system of paying pickers a portion of the cotton they pick. The marketing system is still poor, and growers who take the trouble to separate good from bad cotton usually find they receive no more for the good, much less for the poor, and thereby lose. Usually the village shopkeeper buys the entire crop, or rather takes it in exchange for kind. All he receives he lumps together and sends off to the ginnery. This causes untold confusion and adulteration. Different weight units in various parts of the country are also a bane. In Bombay 784 pounds make a khandi. But in the southern part of Bombay things are measured by the nag, or 336 pounds. In Khandesh the khandi can be anything from 160 to 250 pounds. Other sections use the maund, although in some localities it is 42 pounds, in others 144. Thus what with the shifting khandi, the maund, the nag, the Indian planter knows not where he stands.

In volume of production India stands a poor second to the United States, with China a poor third.



SINCE THE 17TH CENTURY THE SMALL AND CURIOUS SECT OF PARSEES HAVE BEEN BOMBAY'S LEADING INDUSTRIALISTS. WHEREVER COTTON OR ANYTHING ELSE IS SOLD IN BOMBAY YOU WILL FIND A PARSEE, WITH AQUILINE NOSE, CURLING MUSTACHE, AND LIKE AS NOT, A JEWEL IN HIS HAIR

NO COTTON MILLS HAS LIVERPOOL THOUGH COTTON IS ITS STAPLE IMPORT. BALES RECEIVED HERE ARE SHIPPED TO LANCASHIRE AND WEST RIDING OF YORK

EMPIRE

India, when England turned to cotton's development, was already cotton-minded and cotton-planted. But other parts of the Empire have presented a much more serious challenge to the financial and mental resources of England and her Empire Cotton Growing Corp.

In Africa especially have the results of this work been great, but they can be even greater. Aside from the already discussed Sudan, there is Uganda, a vast province in the Dark Continent's center. Up from a pre-War yield of 25,000 bales to 202,000 last year, Uganda still needs harbors, roads, railways. But experts say that the steady crop increase will, in a few years, result in an annual minimum production of 500,000 bales. Sudan has increased from 14,000 pre-War bales to 164,000 last year, all of which was of superior quality.

Outside of Africa, cotton has been encouraged in Australia, where the production seems restricted only by the typical Australian laziness, and in Irak, where tremendous increases can be registered with drainage and irrigation.

RUSSIA

England's struggle to issue a declaration of cotton independence is being helped by increasing contributions to the world's supply from other nations.

In 1916 Russia grew about 1,160,000 bales of cotton on 2,000,000 acres of land. Revolution, rebellion, and general quarrels reduced the crop to a measly 80,000 bales by 1921. A major reason for this reduction was the necessity for growing wheat, formerly imported from other regions. Since then, as Governor Gardner notes, the crop has catapulted to 1,325,000 bales, and last year's acreage again nearly reached 2,000,000, double that of 1928.

The two greatest regions of cotton culture are not in Russia proper but in Turkestan and Transcaucasia. Cotton was probably first grown in Turkestan by the Chinese, who, realizing the difficulties caused by intense heat and slight rainfall, started irrigation works as early as the 1st century. Many of these ancient ditches are still in use, and cotton farms are widely scattered through such appealingly-titled districts as Ferghana, Sir Darya, Samarkand, the Transcaspian Territory and the tributary states of Bokhara and Khiva. The most important of these is Ferghana, which once produced over half the entire Russian crop. The district is in a long valley, irrigated by the Sir Darya River, and its cotton is almost entirely of the American type, with a long, silky staple. In the Transcaspian Territory were the Imperial Estates, laid out along the Murghab River, producing excellent cotton. The poetry-famous Oxus and the Amu Darya also irrigate this region. In Transcaucasia the development of irrigation is also very important. But work along this line and systematic handling of seed and pest-control are steadily improving Russian cotton. The growers of Bokhara have one thing to be thankful for under the new regime. In the Imperial times they could pluck no cotton before it was valued by the official assessor. Since this gentleman was usually very tardy,

(*Continued on page 118*)

Allied Chemical & Dye

The mysterious giant corporation . . . Its president, the able, autocratic Mr. Orlando Weber . . . Reticence as a fine and profitable art . . . Fixation of Nitrogen at Hopewell, Virginia . . . No admissions and no admittance . . . And the answer to two potent threats.

IDEALLY, perhaps, an A. Conan Doyle, an E. Phillips Oppenheim, or a R. Austin Freeman should be the author of a story concerning the Allied Chemical & Dye Corp. and Orlando Franklin Weber, its powerful but uncommunicative president. For heavily about this corporation and its corporate head hangs mystery, and nearly all its activities are seen and reported as through a denial, darkly. It is true that chemical companies generally exhibit a logical reticence about processes, and obviously one should not expect them to publish their formulas even though the so-called secret processes are seldom as vital as they appear in popular imagination. Yet the two other great American chemical companies—E. I. du Pont de Nemours and Union Carbide & Carbon—are not so sensitively reticent. The du Ponts went into motors, politics, and prohibition and have become a familiar portion of the industrial scene. Union Carbide, although with less diverse interests, is upon occasion most reasonably informative concerning even so technical a question as its contribution to alloy steels. But from Allied (and Mr. Weber) comes only an annual statement—and that of so fragmentary a nature as to leave the condition of the company (aside from its evident prosperity) considerably in question.

Thus, for example, Allied's extremely liquid assets include some $92,000,000 in U. S. Government bonds and other investments, in the form of sound and basic common stocks. In which industries Allied has chosen to take a position and what has been the result of these investments, neither the stockholders nor the Stock Exchange itself can discover. Allied points to the gratifying increase in the size of this fund ($10,000,000 in 1929) and considers it has done enough. Unquestionably it played its part in last fall's panic market, but no one will ever know what it bought, when it sold. It may be assumed that whatever profits Allied realized from the use of this money were carried to surplus, were not included in its $30,000,000 net for 1929. A stockholder who once objected to the lengthy intervals between announcements from this company was politely informed that it was essential for him to have confidence in his corporation's management. In fairness, however, it should be added that such confidence has never been misplaced.

The technique of reticence

In fairness, also, a distinction must be noted between Allied and such a company as the open-hearted Ford Motor Co. While Mr. Ford himself inaugurated mass production of the cheap car and may still be said to be the leader in his field, Allied joined the industrial race a long time after the starting-gun had been fired. Mr. Ford has created his competitors, but Allied found itself, in 1920, in immediate and intense competition with Europe and all that Europe meant in the way of a long-established chemical dominance, highly developed processes, and cheap labor. Allied's problem was to make a product as good or better than the German product, with higher labor costs, at a cheaper price. Such a great competitor as the I. G. Farbenindustrie badly underestimated Allied's potentialities, and Allied had nothing to gain by correcting the estimate. The size of its plants, the nature of its machinery, and the number of its employees, therefore, were not made matters of public concern.

This is still true. No one outside the company, and very few inside it, know the current production of the great, new nitrogen fixation plant at Hopewell, Virginia, or what variation of the Haber-Bosch process is used there, or how much man power it requires. Mr. Weber himself has never been at Hopewell, nor has any director of the company; and it is said that only five men at the central office can fully interpret the reports which come each month from Hopewell to Mr. Weber's desk at 61 Broadway. Again, Hopewell is not like Dearborn. Hopewell is a vast undertaking, a promise; Dearborn is a fact.

Thus Allied has gone its way with no accompanying trumpets. Mr. Weber has never given an interview nor made a speech, and under only one document—the 1929 annual report—has he signed his name. He has a philosophy of business no less interesting than that of Mr. Ford (whom he greatly admires), but it reposes upon no bookseller's shelves. It is no more public property than the Hopewell accounts.

This impenetrable reticence has irritated a good many people. Allied dislikes cartels and is unimpressed by associations for the furtherance of this or that. Accordingly when that notable crusader, Mr. Francis X. Garvan, urged Allied to join a group of chemical companies to protect the American industry against Germany, Allied replied in effect that two protectors were perhaps better than one and that while Mr. Garvan's group was protecting America in one way, Allied would protect it in another. This aroused Mr. Garvan to such a pitch of irritation and suspicion that he even harbored thoughts that Allied was on the German side of the fence. Later he accidentally discovered that the precise reverse was true, and he is now a staunch friend. Dr. Carl Bosch, the genius of the I. G. Farbenindustrie, has not been converted. He has invited Mr. Weber to inspect the vast nitrogen plant at Leunawerk, and while Mr. Weber did go to Leunawerk, he observed that war-time monument from the outside. This proceeded neither from modesty nor from a lack of grace, but from an unwillingness to accept a courtesy he could not return. The world knew about Leunawerk; it did not know about Hopewell.

Allied's success in its ten-year lifetime has been phenomenal.

XUM

Whether or not the reticence policy is to be commended in theory, there can be no doubt but that it has been profitable in fact. As a result of attending strictly to its own business and encouraging a similar policy in others, it has been free to bring that business to a pitch of efficiency which is outstanding in an efficient age. To a brief consideration of that efficiency, it is now useful to turn.

Allied's Weber

The Allied Chemical & Dye Corp. is a normal artificial person, incorporated in New York, with the usual complement of officers and directors. Until last year it had a normal chairman of the board, in the person of the well-beloved Dr. William H. Nichols. In form, it scarcely differs from any large manufacturing company, with seventy-two plants spread over the country, each with its superintendent, each reporting to the headquarters in New York. The only extraordinary thing observable by an outsider is the absence of any obvious banking connection. Allied has never increased its original 2,000,000 shares of common stock (nor has it split them). Thus it has escaped the usual branding as a Morgan (Kuhn, Loeb; Bonbright; etc.) company.

But upon closer study, even more striking differences are traceable behind Allied's conventional façade. There is, for example, the matter of the directors. A book could be written about the directors of the Allied Chemical & Dye Corp. These men, all deeply concerned in the company's prosperity, representing the original families which pooled their interests to create Allied, constitute one of the most harmonious bodies on record. There are several reasons for this: for example, the company's gratifying success. But the chief reason is unquestionably the power and prestige of the company's chief executive officer.

For, in the final analysis, it is Orlando F. Weber who runs the Allied show. When the merger had been completed, he was asked to head the new company, and with some reluctance agreed. The decision once made, however, Mr. Weber's hesitancy disappeared. He faced the facts of 1921 with a vigor which always astounded and occasionally angered the older men of the merging companies. Inventories were big, selling prices were high, and business was bad. Out of the situation itself arose policies of drastic reorganization. Personnel was carefully combed, and many a boom executive found himself—together with his fellows in other industries—fighting for his job. A rigid system of monthly reports was instituted. Sales and costs figures underwent cold scrutiny. Executives were taught to look upon accounts, not as necessary bookkeeping, but as vital photographs of the companies.

Underwood & Underwood
EUGENE MEYER

With such directness did Mr. Weber apply his technique of operation to the new company, and with precisely the same directness is that technique applied today. Allied is now a company where man power is the all-important source of wealth; it is a company with a vast confidence in youth, and a willingness to back that confidence with a considerable investment. Promotion is swift, responsibility heavy. When youth fails, it is instantly replaced. But in ten years, it is said that Allied has made only seven such mistakes. Such a policy naturally provides both an operating staff and an executive reserve. Upon that reserve Allied expects to draw in the years to come, and it is possible to consider it Mr. Weber's answer to the question of what Allied will do when he retires.

For the question is both natural and frequent. Mr. Weber is the complete autocrat, a dictator as absolute as Mr. Ford, and rather less approachable. Away from his office, he is social, genial, wise, a fifty-year-old student of James and Emerson, a thoughtful and intelligent father of two small children. But in his office, he rules without fear and without compromise.

The great decade

This, then, is the machine which Mr. Weber began to build in the shadows of the panic of 1921. It has created a great company and has largely helped create a great American industry. It is currently said that (a) the U. S. chemical industry has a production equal (in dollar value) to the production of the iron and steel industry and (b) that Allied is the greatest chemical company in the world. Both statements have a basis of fact, but both are subject to severe qualification. As long ago as 1925 the United States Government, in its census of manufactures, estimated the value of chemical products at $6,400,000,000. This total was reached, however, by assembling nearly every industrial process involving chemical reactions, and was weirdly inaccurate from the standpoint of products turned out by strictly chemical companies. It included, for instance, the manufacture of gas and the refining of petroleum. It also threw in glue, paint, varnish, and soap. If only chemical noses, in the stricter sense of the term, were counted, the products of chemical corporations would have been figured at about $813,000,000, or approximately the output of the tobacco or the rubber businesses. Also a flatly superlative description of Allied as "greatest" must divorce the du Pont company entirely from its motor interests; must ignore the fact that du Pont, aside from its motor income, makes more money than Allied; that Union Carbide has also a greater net income; and that, from an international standpoint, it would be very difficult to convince an Englishman that Allied was greater than Imperial Chemical

Brown Bros.
THE LATE DR. WILLIAM H. NICHOLS

Industries or a German that it was greater than I. G. Farbenindustrie. Allied is, of course, the outstanding American example of a manufacturing company dealing in such diverse things as acids, alkali, coal-tar products, dyes, and sodium nitrate. An analogy could be created by supposing the existence of an American Metals Co., owning and *operating* the U. S. Steel Corp., Anaconda, and the Aluminum Company. No one of Allied's companies is more than theoretically familiar with the methods of any other.

Considering this distinction, it is undeniable that Allied, largest producer of alkali, coal-tar products, nitrogen, etc., is the major factor in that wide industrial field so loosely labeled *chemicals*. Even aside from its automobiles, the du Pont company deals largely with nitrocellulose in peace and war, while Union Carbide centers around oxygen, calcium carbide and its associates. For a strictly chemical company and for a company which sells almost exclusively to other manufacturers and hardly at all to the general public, Allied has built up an extremely large business on an extremely unspectacular foundation. Furthermore, it is currently beginning to specialize in at least one field—the production of synthetic ammonia—in which it has far outstripped its American competitors. And certainly its financial statements bristle with large, round figures indicative of profound solvency. With no funded debt, with a depreciation fund of $110,000,000 (du Pont's is $44,000,000), net working capital of $148,000,000 (du Pont's is $85,000,000), current assets of $157,000,000 (du Pont's are $116,000,000), and the investment fund already referred to, Allied is in a position of great strength. It has no fear of scrapping old for new. When the experimental plant was built at Syracuse, Allied put $5,000,000 into the venture and knew it must abandon it inside a decade. Each one of Allied's plants is subject to the same ruthless treatment. Another little-realized source of strength is its identification with the necessities of industrial life, there being no consumer vagaries or style declines in the consumption of such commodities as sulphuric acid, alkali, and sodium nitrate.

Non-mysterious, aloof

In this last fact lies yet another key to the mystery which appears to surround the Allied Chemical & Dye Corp., enveloping alike the National Aniline plant at Buffalo, the Solvay Process plants at Syracuse, Detroit, and Hutchinson, Kansas, the Atmospheric Nitrogen plant at Hopewell, Virginia (an un-garden city near Richmond), or any of the numerous plants operated by the Barrett Company or the Semet-Solvay Company. What makes these walls so forbidding, these offices so private, these grasses so kept off of? Partly a policy, but even more a remoteness. For (with very rare exceptions) the Allied companies make nothing that goes into the hands of the general public, nothing that the consumer touches or recognizes or is conscious of in more than the vaguest academic sense. Allied is essentially a middleman company, taking raw materials, putting them through various stages of manufacture, then selling them to some other industrialist through whom (usually in a thoroughly disguised and often unsuspected form) they ultimately become consumer items. There is one conspicuous exception to this statement, however, for the Barrett Company (largest Allied unit) does approach the consumer by way of the Barrett roofs over his head and by the Tarvia roads under his auto wheels and sometimes by the Barrett Queen Bee Coke in his furnace. But most, even of the Barrett products, mean little to the consumer's mind. The dyer buys naphthalene and benzol, the tanner buys Barretan tanning extract, the builder buys creosote to preserve wood, and Dr. Baekeland's Bakelite Corp. may buy phenol to make Bakelite. Thus most of the Barrett products are intermediates subject to further processing or incorporated in some further product before reaching what is to the consumer a real and a tangible world.

And so it is with other Allied products. We do not see in window glass the soda ash which has gone into its construction; we do not realize that our soap is fat plus caustic soda; we therefore fail to appreciate what the Solvay Process Company is doing for us. If the dyes in our clothing do not remain fast, we complain to the clothing store and the clothing store complains to the clothing manufacturer and perhaps the clothing manufacturer complains to National Aniline, but by that time we have received our money back and lost interest in the sequence. As for General Chemical Co., its basic product is sulphuric acid, but unless we need to purify some petroleum, to "pickle" (remove the scale of iron oxide) some steel, to mix sulphuric acid with ammonia and get fertilizer or with nitric acid and glycerine and get dynamite, we are familiar with sulphuric acid largely through the adjective *vitriolic* and through those fortunately rare occasions on which angry persons go about throwing sulphuric acid (or oil of vitriol) in faces. There is no great mystery about most of what Allied does—caustic soda and sulphuric acid, for example, are thoroughly standardized products though their processing may vary from company to company and country to country. Indeed the whole function of (for instance) sulphuric acid of a given concentration depends upon its being precisely like every other equal concentration of sulphuric that ever has been made or ever will be made by any manufacturer whatsoever. But because nearly all Allied products are aloof from the outsider and not especially thrilling to him, he drapes Allied thickly in the majesty of his own ignorance and then gasps at its progress and profits.

Nitrogen fixation

One Allied division, however, the Atmospheric Nitrogen Company, is of more general interest, partly because of nitrogen's war-time importance in explosives and peace-time importance in fertilizers and partly because nitrogen fixation is a recent and current development and properly regarded as one of man's most successful and most fundamental experiences in overcoming the stinginess of nature. Nitrogen is an essential of explosives and also of plant food. It is a very common element (the earth's atmosphere weighs roughly some 5,333 million-million tons and three-fourths is nitrogen), but for practical purposes nitrogen needs to be combined with some other element (i.e., to be fixed) in order to be usable. In pre-War days, nitrogen suitable for fertilizer was found chiefly in nitrogenous waste material from birds (guano deposits) and beasts (manure) and in natural deposits of sodium nitrate in Chile. There was also beginning the development of ammonium sulphate (which contains nitrogen), a development which is still of the first importance and in which the Semet-Solvay Company participates. High explosives, however, were made largely from sodium nitrate so that Chile had practically a monopoly on explosive raw material. Two processes, the Arc and the Cyanamide, had been devised for forcing nitrogen to combine with other elements (oxygen and calcium carbide respectively), but both were extremely expensive. Then, just before the War, the German Badische-Anilin-und-Soda-Fabrik (now part of I. G. Farbenindustrie) introduced the Haber-Bosch ammonia process by which most

[*Continued on page 130*]

Properties v. Principles

The road from Textbook through Laboratory to Factory and how slowly it is traveled. "Not Angels, but Angles."

CONSIDER, for a moment, the case of Dr. Gilbert N. Lewis and the case of Dr. Edward G. Acheson. Dr. Lewis has an idea (described in more detail in the following pages) that time goes two ways and that, from the standpoint of science, a distinction between the past and the present is hardly more than an idle superstition. Interesting is the Lewis Theory, arrived at by one of the world's greatest physicists, and a New Idea, just as, at one time, the suggestion that heat was not a substance but a form of energy was a New Idea. Yet the Lewis Theory does not butter any parsnips. It does not enable anyone to make anything, to make anything better, or to make any more of anything. It has everything to do with Thought but it has nothing to do with Substance. It is precisely the type of theory that makes stupid people sneer at theorists.

Dr. Acheson, on the other hand, discovered carborundum (also more fully described below). The fact that carbon and silicon, when heated, will combine, coupled with the fact that the combination is one of the hardest of materials, gave Dr. Acheson an extremely valuable abrasive which has since come into the widest industrial use. And this Acheson Substance is often referred to as an outstanding example of applied science. But of what is it an application? Evidently not itself a theory, it is equally not the application of a theory. Theories are not held about such things as whether silicon and carbon will combine when heated and if so whether they will produce a hard substance. If the supposition arises, the experiment is made and the fact determined. To call the discovery of carborundum an application of science, it would almost be necessary to go back to the formative period of chemistry in which the idea of carbon and the idea of silicon were original concepts in the sense that the Lewis Theory is an original concept today. Carborundum has nothing to do with contemporary thought or with recent thought. If its discovery could be called the application of anything, it could best be called the application of heat.

And here, generally speaking, is exactly the difference between what is commonly called pure science and what is commonly called applied science. Here is also the explanation of the fact that in a period in which we hear so much of applied science, it is ordinarily so difficult to isolate the sciences back of the application. There is a widely held theory that the factory of today is built on the textbook of tomorrow. This is a pleasant theory because it enables people who think that astronomers are a waste to tolerate them by remembering that weather reports are useful. Yet it is a slippery half-truth, the percentage of error lying in the assumption that the industrialist gets his theory while it is recognizable as such. As a matter of fact, by the time the secrets of nature have become incorporated in progress, they have usually long since ceased to be confidential. The applied scientist is not interested in the principles of science; he is interested in the properties of substances. And he is usually interested in the properties of substances so long established, so long classified that the theorist has long ceased to show interest in them.

Indeed, it is almost back to the time of Lavoisier, who was guillotined in 1794, that pioneers of science were interested in the simple elements and in the simple manner that the usual industrial chemist is interested in them today. It is certainly true that there could not well have been much industrial chemistry at a time when the best chemical minds thought, for example, that water was an element and that a substance called phlogiston was the stuff of which fire was made and that a burning substance gave up its phlogiston. When Lavoisier showed that water was a combination of hydrogen and oxygen, when he showed that combustion was a union with oxygen, and when he drew up the first tentative list of elements in the modern chemical sense (as opposed to the ancient "elements" of fire, earth, air, and water), he was a theoretical pioneer whose discoveries have certainly had a very wide application indeed. But the theorist of today has proceeded far beyond Lavoisier. He has looked so far inside the atom that he is currently worried about whether matter is composed of particles or of waves, a speculation which emphatically does not lend itself to industrial purposes. As far as elements of different kinds of tangible, dimensional things are concerned, he knows (or feels very sure) that there are ninety-two elements, that two have not yet been discovered, that one of the missing two is about as heavy as iron and melts at the melting point of tin, and that the other resembles the alkali metals and has an atomic weight of about 224. But it is not the properties of any element as much as the structure of all elements that interests him, and surely most of his current speculation is useless in any narrow and pragmatic sense. It is such stuff as dreams, but not fertilizers, are made of.

The industrial chemist, indeed, derives not so much from chemistry as from the other half of his title—industry. He is very often at least as much an engineer, an operating man, as a researcher, an experimental man. Sometimes he is engaged in the large-scale production of something previously produced only in the laboratory. Sometimes he finds a new source of a substance or a new use for a substance or a more economical method of producing a substance. And sometimes, in somewhat the tradition of Dr. Acheson, he mixes old substances together and produces something not previously known on the earth. But between him and the nonindustrial researcher there lies almost always the double chasm of mass production and unit cost. Until a process has become fool-proof it is not profitable to the industrialist, and after it has become fool-proof it is not interesting to the scientist. The run-of-mine product of commercial chemistry represents an application of the principles of the science to about the extent that the adding machine represents an application of the principles of mathematics.

There remain, however, some industrial organizations which can afford to support the experimenter and his experiments. One such organization is the General Electric Company, and one instance of a most happy union between Science and Industry is found in the work of Dr. Irving Langmuir.

THE "FATHER OF CHEMISTRY" AS ENEMY OF THE PEOPLE—LAVOISIER'S ARREST BY THE TERROR

Dr. Langmuir entered the employ of General Electric primarily to produce a better electric light. He worked for some years upon a general study of electronic emissions in vacuum, a study in which he himself said that he could see no practical application but in which Dr. Whitney, head of the General Electric laboratories, encouraged him to continue regardless of practical results. Eventually Dr. Langmuir not only succeeded in producing the better light (the nitrogen lamp), but also supplied (in his concentric shell theory) a marked addition to the world's knowledge of atomic structure. It will be remembered that this discussion began with Dr. Lewis as an instance of the nonindustrial scientist. In Dr. Langmuir the circle is completed, for much of Dr. Langmuir's contribution to the theory of how atoms are put together continues and develops the work of Dr. Lewis along the same line.

So there is some direct connection between Mind and Matter, and sometimes the textbook and the factory do go to school together. And of course it has been many years since there has existed any real doubt concerning the value of the industrial chemist, either from the standpoint of private profit or of public weal. It may seem rather ungracious to insist that the applied scientist is usually getting his rabbits out of very old hats. Yet the industrial chemists themselves (or rather, perhaps, their apologists) have a certain tendency to conceal the hat and focus the attention upon bunny's bright eyes and silky ears. The industrial chemist has recorded a performance and achieved a stability which makes superfluous any aroma of magic and of mystery. He is an industrious, an able, a gifted worker, making to society a contribution of unquestioned value. But he ought not be regarded as a magician and his work should not be considered as wizardry, nor should the theory of today be expected to turn up in the cannery of tomorrow. There is an old story about a Roman Churchman who, seeing in the streets of Rome some slaves imported from Britain and struck by their blond hair and blue eyes, exclaimed, "Not Angles, but Angels." Perhaps puns, like the Time of Dr. Lewis, may need to reverse themselves in order that an equilibrium may be reached.

. . .

One of the strongholds of the miraculous interpretation of applied science has been recent popular literature on the industrial chemist, a literature which usually considers itself compelled to "sell" the scientist as a useful person and preaches a kind of "muscular chemistry" designed apparently to demonstrate that one ought not lift the eyebrows at test tubes and retorts. A good deal more illuminating volume on chemistry (chiefly pure chemistry) is a book to be published in June by Simon & Schuster which has appeared serially in the *Forum*. Titled *Crucibles*, written by Bernard Jaffe, chemistry instructor in New York, and the object of a joint Simon & Schuster-*Forum* award of $7,500 as year's best book from the standpoint of "humanizing knowledge," this volume is semibiographical, semihistorical, tracing the progress of chemistry from the 15th century through the lives of such outstanding chemists as Priestley, Lavoisier, Dalton, Mendeleef, Thomson, and Langmuir. There is a tendency to approach the subject from a consideration of chemical St. Georges slaying natural dragons, and the biographical portion of the sketches is necessarily superficial and uncritical.

On the other hand, however, the discussion of chemistry is immeasurably more specific and informative than might have been expected, and the entire field of theoretical chemistry has been oriented in a uniquely illuminating manner. The extremely difficult problem of presenting scientific knowledge in a manner that is interesting to the layman without being offensive to the scientist has been ably and successfully met.

Carbonyl Chloride
Dr. Francis C. Frary

PHOSGENE first became internationally prominent in December, 1915, when the German troops on the West Front added it to the chlorine which they had introduced in April of the same year. It became extensively used by both the Germans and the Allies, the French being particularly partial to it in the form of a sixty-pound shell containing thirty pounds of phosgene. Phosgene (carbonyl chloride, $COCl_2$) is a combination of carbon monoxide and chlorine. Air containing one part in 100,000 of phosgene will produce disability through acute irritation of the lungs, and the continued inhalation of larger concentrations results fatally. Although not as fatal as hydrocyanic gas, and dissipating more rapidly than mustard gas (which produced probably a majority of the War's gas casualties), phosgene was more toxic than straight chlorine and was particularly useful at Verdun in 1916 and Arras in 1917.

After the United States entered the War, the government arsenal at Edgewood, Maryland, became a center of phosgene production with Dr. Francis C. Frary, now director of research at the Aluminum Co. of America, and Major D. J. Demorest in charge of large scale phosgene manufacture. It is not difficult to make carbon monoxide and chlorine unite (exposure to sunlight is sufficient for the reaction), but for quantity production it was necessary to pass the two gases over a catalyst of specially prepared charcoal. With the close of the War, phosgene reverted to its former relatively obscure function as a maker of intermediates in the dyestuff industry.

In addition to his work with phosgene, Dr. Frary is also the inventor of Frary metal, another War baby. A hard alloy of lead, used in shrapnel bullets, it is composed of 85 per cent lead and 15 per cent antimony. During the War antimony (mostly imported from China) was scarce and hard to get, so Dr. Frary substituted barium and calcium for antimony and got nearly as hard an alloy. Frary metal has a peace-time use as a bearing.

Dr. Frary has been with the Aluminum Co. since 1918. He has developed the electrolytic refining of aluminum to a point at which aluminum of 99.95 per cent purity is produced. He is a graduate of the University of Minnesota (where for some years he taught chemistry) and studied also at the University of Berlin.

Nitrogen Lamps
Dr. Irving Langmuir

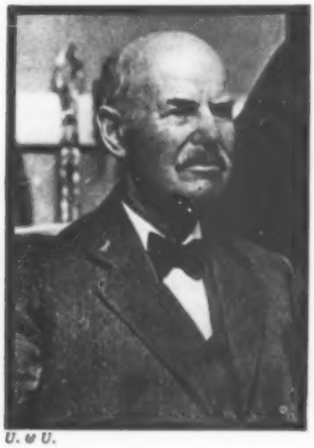
U. & U.

EVER since Edison made the first electric light bulbs, the fact that the vacuums in them were not complete was blamed for the various imperfections they exhibited. When Dr. Irving Langmuir began working on bulbs in the General Electric laboratories at Schenectady, he purposely made bulbs with very poor vacuums and discovered that they were no worse than those with the highest vacuums possible. Thus he discovered that everyone had been on the wrong track and that poor vacuums did not necessarily make poor lamps. He then found that the real trouble lay in the evaporation of the tungsten filament, emanations from which later formed on the walls of the bulb. He decided, therefore, that what the bulb needed was not a high vacuum but the addition of a small amount of inert gas which would not enter into any reaction with the filament, but would reduce evaporation. Such an inert gas is nitrogen, and today, as the result of Dr. Langmuir's independent thinking, the best electric light comes from nitrogen lamps.

While working on bulbs Dr. Langmuir learned a great deal about vacuums and later applied this knowledge to the development of an improved radio tube, Langmuir patents now forming an important asset of Radio Corp. of America. Although more a physicist than a chemist, he is one industrial scientist who has added materially to the world's store of knowledge. Dr. Langmuir is an enthusiastic advocate of educational methods which encourage the student to learn for himself instead of remaining passive while being crammed with information. In a discussion of this topic of individual experiment, he told of a six-year-old boy who collected insects, weighed them on a fine scale, dried the water out of them, and weighed them again, keeping careful notes of the weight difference between the hydrous and anhydrous bugs. "I am afraid," said Dr. Langmuir, "our universities . . . tend to discourage such wholesome individual activities."

Dr. Langmuir has been a General Electric researcher since 1909, holds degrees from the Columbia School of Mines, the University of Göttingen, Edinburgh University, and Columbia University. His older brother is a chemist in New York City; he himself began chemical experiments at the age of seven.

Coke and Clay
Dr. Edward G. Acheson



U. & U.

WHEN two substances are rubbed together, the softer is worn smooth and the process is called abrasion. Sandpaper and emery wheels are common abrasives, and the proverb about having one's nose on a grindstone is an illustration of an abrasion process. The most widely used industrial abrasive, however, is carborundum, which Dr. Edward G. Acheson discovered in 1891. Dr. Acheson was primarily an electric light man (he had worked for Thomas Edison at Menlo Park), but he was also an inventor and in 1891 he had an urgent necessity to invent something which would make him some money. He remembered that Dr. George F. Kunz of Tiffany's had told him jewelers needed a good abrasive and also remembered a laboratory experiment in which pieces of clay had become impregnated with carbon and gained in hardness. So he took some clay and some coke, mixed them together, put them in a crude form of electric furnace, and heated them up. When his mixture had cooled off, he discovered that some of the clay had combined with some of the coke to form a new compound and that this new compound was hard enough to cut and grind diamonds. Dr. Acheson thought that his new substance was made up of carbon and corundum, so he called it carborundum. It was really composed of silicon and carbon and is properly known as silicon carbide, but carborundum is its commercial name.

Today carborundum has a wide industrial usage. It puts points on phonograph needles and fountain pens. It polishes marble and sandstone. It cuts, grinds, and polishes precious stones. It makes locomotive wheels round and smooth. The Chinese polish jade with it, and the East Indians use carborundum wheels to hull rice. Dr. Acheson's original Carborundum Company soon got out of his hands and came under Mellon control. His Graphite Company (based on his discovery that from carborundum could be obtained a form of graphite purer than the natural product) became a subsidiary of Union Carbide & Carbon. As for Dr. Acheson himself, he is now seventy-four years old and lives mostly in St. Petersburg because he does not like cold climates, and even St. Petersburg is hardly warm enough for him.

Silk from Sow
Dr. Arthur Dehon Little

International

DR. ARTHUR DEHON LITTLE is a distinctly Bostonian chemist who collects Chinese porcelains, smokes Pall Malls, and contributes to the *Atlantic Monthly*. In 1886 he went into business for himself as one of America's pioneer consulting chemists. He spent a good deal of time analyzing water at $5.00 a specimen and sugar at seventy-five cents a specimen, and in the first year the firm made only $600. But Dr. Little hung on, the value of chemists and chemistry became yearly more important, and today the Little research laboratories on the banks of the Charles River (adjacent to the buildings of Massachusetts Tech, at which Dr. Little studied and whose School of Chemical Engineering Practice he founded) are show places of science as well as sources of profit. The list of his accomplishments includes the reclamation of turpentine and resin from cut-over lumber, the utilization of wood wastes in paper, a "vapor phase" cracking of petroleum which yields an antiknock gasoline, and the development of the Schultz process for chrome-tanning leather.

Unlike many chemists, either applied or academic, Dr. Little is able to interpret as well as exemplify the scientific mind and is one of the most advertised of chemists. He has long and eloquently preached the gospel of research and has interested many a manufacturer in supplying research funds (notably George Eastman's contributions to M. I. T.). He is an excellent talker and writer, and such aphorisms as "There is great danger in an organization chart. Someone might mistake it for an organization" have been widely quoted. A prize exhibition in his laboratory is a silk purse, manufactured from a hog's ear. Dr. Little got the ear from a packer, made it into artificial silk, and thus showed the fallacy of the ancient proverb that out of sows' ears silk purses cannot be made.

Meatless Meat
Dr. David Wesson

Acme

CHEMISTS who attended the April convention of the American Chemical Society in Atlanta ate, among other foods, sandwiches made of what the newspapers wittily described as "cottonseed sandwiches." More properly speaking, the sandwiches were filled with Wessona, a meat substitute which Dr. David Wesson, its inventor, describes as "palatable and nourishing." Wessona is a product of the cottonseed, has become a valuable by-product. The oil from the seed is made into salad oils (such as Wesson Oil) and lard substitutes (such as Snowdrift). And in Wessona, Dr. Wesson has discovered that the left-over pulp can be made into a substitute for meat. It has certainly the advantage of economy, since beefsteak, with about 35 per cent protein, sells for forty cents a pound and cottonseed meat, with 60 per cent protein, for around five cents a pound.

Dr. Wesson graduated from M. I. T. in 1883, worked for the N. K. Fairbanks Co. (lard refiners) and then for the American Cotton Oil Co., where he was for five years chief chemist. In 1895 he went into the manufacture of bicycles, but while making bicycles continued oil experiments and discovered improvements in production that resulted in what he considered the finest and least odorous cottonseed oil ever extracted. So he helped organize the Wesson Process Co., put Wesson Oil on the market, and has been in the cotton oil business ever since. He is more than enthusiastic about the future of Wessona and only hopes that he lives long enough (he is sixty-nine) to see its acceptance as a staple of the nation's diet. Meanwhile, there is no question but that the development of cottonseed oils and shortenings has enabled the cotton raiser to sell, at $32 a ton, cottonseed which he formerly threw away and which in some years have a value equal to almost one-sixth of that of the cotton itself.

The Nitric Acid Family
Dr. Charles L. Reese

Keystone

WHAT is commonly known as an explosion is the result of a combination of solids changing into a combination of gases, with the gases occupying a much larger space than the solids from which they come. When a group of selected solids, tightly packed in a steel case, changes into gases, the force of their expansion is sufficient to blow the steel case to pieces. And of course any persons (such as soldiers) in the vicinity are likely to be wounded or killed.

The active agent in most modern high explosives is nitric acid, the expanding gas therefore being nitrogen. In addition to nitrogen, the ideal explosive should have also carbon, hydrogen, and oxygen, all of which burn readily and heat up the nitrogen, making it expand much more rapidly. Thus cotton (which is a combination of carbon, hydrogen, and oxygen) and nitric acid (which is a combination of nitrogen, hydrogen, and oxygen) together form the nitrocellulose explosive family commonly known as guncotton. A mixture of nitric acid with toluene (another carbon-hydrogen combination) results in the trinitrotoluene so famous as TNT. A liquid form of the nitro group is nitroglycerine, made by adding glycerine to a mixture of sulphuric acid and nitric acid. This liquid, however, is much more usable when it is absorbed in some suitable solid, in which condition it is known as dynamite.

As the nitro family was discovered chiefly about the middle of the 19th century (although TNT is a 20th century German development), modern explosive men have been engaged chiefly in refinements and improvements and also in adapting explosives to peace-time activities. Thus Dr. Charles L. Reese, for many years chemical director of E. I. du Pont de Nemours and now consultant of the same company, is perhaps most famous as the man who "disarmed dynamite" by turning large quantities of a left-over war-explosive (it was TNT, not dynamite) into a less dangerous industrial explosive called Sodatol. Dr. Reese has also made two important contributions to the safety of miners. When dynamite froze (as often), miners frequently thawed it out by toasting it over a fire. Though not as suicidal as it may seem, this procedure did result in many accidents, so that Dr. Reese worked out a nonfreezing dynamite which never required toasting. He was also prominent in the American development of permissible explosives, i.e., mining powders which leave behind them no lingering flame to ignite coal gas or other combustible portions of the mining atmosphere. From April, 1917, to November, 1918, the American explosive industry produced 375,656,000 pounds of military explosives, a large percentage of which were prepared by Dr. Reese and the 1,200 chemists who made up his War-time staff.

Absolute Alcohol
Dr. Milton C. Whitaker

DR. MILTON C. WHITAKER, at one time professor of chemical engineering at Columbia, formerly vice president of the U. S. Industrial Alcohol Co., vividly illustrates an outstanding difference between research and operating chemistry. That difference, crudely stated, is that the research chemist is making something; the operating chemist is making something that can be sold at a profit. Much of Dr. Whitaker's work involves the manufacture of alcohol, a problem which lost its research significance about 1818. But from an operating standpoint the process is as currently important as the earning statements in which its results are reflected. Or, taking a more specialized example, Dr Whitaker did no new thing in producing an absolutely pure, anhydrous (waterless) alcohol. Absolute alcohol had long been familiar to laboratory men, but on a scale and at a cost that made it familiar to laboratory men only. To produce absolute alcohol in carload lots, at a cost low enough to permit its use with gasoline as a motor fuel, involved a discarding of the research process and the development of an economic engineering method to attain the same result.

Dr. Whitaker has therefore been a director of chemical engineering rather than a researching chemist. To produce a new product, he first builds an experimental plant which functions both as a large laboratory and a small factory. As a laboratory, it works out a process or arrives at a product. As a factory, it manufactures and sells the product. Not until the product has been sold and has stayed sold (with the trade) is the experimental period over and mass production begun.

An organization man who is suspicious of over-organization, Dr. Whitaker is tight-lipped, sharp-eyed, eminently practical and eminently square. At Columbia he was as likely as not to devote a chemical engineering period to a discussion of a longshoreman's strike or some similar current event. Said one student, awkwardly but sincerely, "He taught us to think like engineers and to behave like men." Said the more polished Dr. Nicholas Murray Butler: "We look upon him as one of our own and follow his career with pride and satisfaction." Dr. Whitaker is now president of the Catalytic Process Corp.

Separated Sands
Mr. John Van Nostrand Dorr

CHEMISTS familiar with Markham's *Man with the Hoe* might be tempted to call John Van Nostrand Dorr the *Man with the Rake*, for it is certainly upon a raking invention that Mr. Dorr's large company and large reputation are securely founded. In 1904 Mr. Dorr had an interest in a South Dakota cyanide plant for extracting gold from ore. One of the most difficult problems was that of classification. When a mass of crushed ore is carried in a stream of water it is necessary to classify it, that is, separate the larger particles of sand from the smaller ones of slime. Early classification depended upon gravity alone, the stream of ore and water flowing slowly through a conical vessel, with the heavy sand settling to the bottom and being discharged from the point while the light slime overflowed at the circumference. This separation was incomplete, and the sand clogged up the cone.

Mr. Dorr rigged up an inclined trough with the upper end open and equipped with a series of rakes which continuously dragged the settled sand from the trough at one end while the unsettled material overflowed at the other. From so simple a device came not only the transformation of an unpaying mine into a mine sold later for nearly $1,000,000, but the beginning of a whole family of Dorr machines for mechanically classifying, thickening, and agitating solids suspended in liquids. Nearly all hydraulic refining employs Dorr machinery, which is also used in many chemical processes, in sewage treatment, and in the purification of water. Municipal sewage treated by Dorr methods is estimated at more than 1,250,000,000 gallons per day; Dorr-treated drinking water at 125,000,000 gallons.

Mr. Dorr was born in Newark, New Jersey in 1872, graduated from Rutgers in 1894, worked for a time with Thomas Edison, traveled to South Dakota where he worked in the hard old mining town of Deadwood. Since his second marriage he has acquired an appreciation for music, sculpture, and other arts and spends most of his summers in Europe. His stepdaughter (Mrs. James Warburg) wrote the lyric for "Can't We Be Friends?" in the *Little Show*. A practical application of his interest in music is seen in his support of the music school at Greenwich House, Manhattan settlement house where worked flying Amelia Earhart.

No Past, No Future
Dr. Gilbert N. Lewis

SCIENCE has still its frontiers, its new generalities and hypotheses. Thus when, in April, Dr. Gilbert N. Lewis, physicist and chemist of the University of California, acknowledged receipt of the 1930 medal of the Society of Arts & Sciences, he advanced a theory which, sensationally expressed, denies the idea of time; or, less melodramatically, substitutes two-way for the one-way time ordinarily conceived.

Scientific thought, said Dr. Lewis, has long been corrupted by attributing to natural processes a human nature. There is in nature no compulsion; what we call the *law* of gravity is simply the record of repeated experiences. There is no reason why a ball drops to the earth; if it should fly up to the sun and break gravity's *law*, it would be no miscreant, no criminal. To the experiences, the happenings of the *physical* world man has wrongfully added his own *psychological* attributes of cause and effect and purpose.

And the ordinary concept of time, the concept that time is finished and the future not begun, Dr. Lewis considers metaphysical and unscientific. "One must never attempt [from a physical standpoint] to distinguish between the past and the future." Old ideas concerning light rays, for instance, were based on the temporal fallacy. Light came from a source, scattered out into infinity, could never be re-collected. Thus any brief candle, once out, would light no more fools the way to dusty death. But (says Dr. Lewis) this idea is not correct. "The energy from an emitting atom does not spread out through space but goes in its entirety to one other atom, and this is a process which is symmetrical with respect to the past and the future. Thus the light does not go out, but goes to another atom and may come back again, and the process is infinitely repeatable.

"There have been many," continues Dr. Lewis, "who have realized that just as a pack of cards, if indefinitely shuffled, will eventually return to its original arrangement, so any physico-chemical system, when left to itself in any initial state, must return to that state. I do not say that the whole universe . . . will sometime return exactly to the condition of the present moment but [from the standpoint of physics alone] this is the conclusion."

Phenol-Formaldehyde
Dr. Leo H. Baekeland

Keystone

DR. LEO H. BAEKELAND is one of the chemists who has given us things. Specifically, he has given us Bakelite, described (by Bakelite Corp.) as the "material of a thousand uses." Bakelite is made by combining phenol, a coal tar product known also as carbolic acid, with formaldehyde, made from wood alcohol. Phenol is also used as a disinfectant, and formaldehyde, in embalming fluids, but even before Dr. Baekeland's experiments a great many chemists had attempted to join the two in the manufacture of a synthetic resin such as is naturally produced by pine trees. Dr. Baekeland, not only studying the literature of the reaction, but also deliberately repeating his predecessors' experiments to see why they had failed, discovered how to control the reaction in definite, practical ways to obtain products of the resinoid type which had strength, toughness, resistance to heat and to chemical attack. His resin was such a poor conductor of electricity as to make an excellent insulator. Today, in various of its forms, Bakelite is used for such varying objects as airplane propellers, cigarette holders, fountain pens, billiard balls, radio panels, telephones, automobile steering wheels, and insulation of every type.

Dr. Baekeland was born in Ghent in 1863, graduated from the University of Ghent, and won a traveling scholarship which brought him to this country in 1888. One of his earliest interests was photography, and long before the discovery of Bakelite he had invented Velox paper and sold the process and his manufacturing business to the Eastman Kodak Co. With the proceeds of Velox he settled in Yonkers and devoted himself to his phenol-formaldehyde studies. He is now president and largest stockholder of Bakelite Corp. He spends about five months of each year in Miami, where he lives in the house formerly owned by William Jennings Bryan. There he is frequently disturbed by unscientific pilgrims to whom he is only the present occupant of the Commoner's shrine.

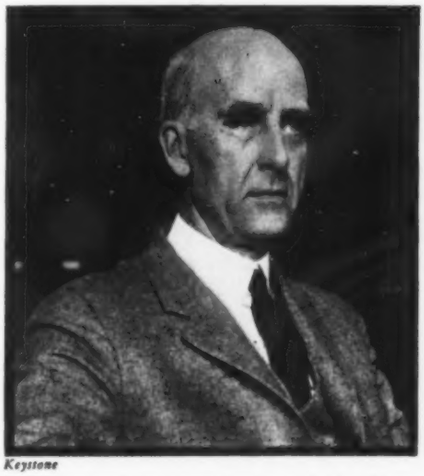
Alloy Steels
Mr. Frederick M. Becket

Pirie MacDonald

TO Frederick M. Becket, vice president of Union Carbide Co., the alloy-steel industry owes much of its present flourishing condition. Tungsten, chromium, and other steel-alloys, although by no means unknown before Mr. Becket's time, had been usually produced by reducing their ores with aluminum. Although aluminum produced satisfactory ferro-alloys, the price of aluminum made the production costly. It was Mr. Becket who found that silicon, cheap and available in large quantities, could be substituted for aluminum, and that the steel-alloys could thus be much more economically extracted from their oxides and sulphides.

Familiar steel-alloys are tungsten steels, in high-speed cutting tools; vanadium steels, resistant to shock and vibration and therefore adapted to use in auto and airplane engines; and molybdenum steels, used, during the War, in Liberty motors and in baby tanks. Chromium steels, used in armor plate and in projectiles, are currently most discussed as "stainless steel" and "rustless iron," in which employment their outstanding advantage is resistance to corrosion. Prominent among noncorrosive steels manufactured in this country is Nirosta, made by some thirty U. S. Steel companies by license agreement under Krupp patents. Stainless steel has already been popularized in cutlery; rustless iron (with a lower carbon content) is even more resistant to rust. During the War, at the request of the government, Mr. Becket perfected zirconium steels, used in the construction of light armor plate. Mr. Becket was born in Montreal in 1875, graduated from McGill University, got his first job with the Westinghouse Electric & Manufacturing Company. He was the first American to make ferrovanadium on a commercial scale, and participated in the manufacture of early vanadium and zirconium steels. He is president of Union Carbide & Carbon Research Laboratories, Inc., and vice president of Union Carbide Co. and Electro Metallurgical Company.

From Sun to Dirigible
Dr. Richard Bishop Moore



Keystone

CHEMISTS who work with helium and the radioactive group of elements to which it belongs are still close to the earliest experimental developments in their field. In 1868 helium, then not known on earth, was detected in the spectrum of the sun. In 1894 Sir William Ramsay made the terrestrial discovery. And from Dr. Richard Bishop Moore, now science dean at Purdue University and at one time a student and coworker with Sir William, comes much of the world's knowledge of helium today. Although helium's lightness (comparable to hydrogen) and freedom from inflammability at once recommended it for use in lighter-than-air craft, it was not until the World War that the demand for helium became acute. In 1914 a German zeppelin, pierced by incendiary bullets, failed to blow up in the customary manner and demonstrated that the helium-filled dirigible, compared to the dirigible using hydrogen gas, was like an ironclad against a wooden ship.

Since natural gas is the most obvious source of helium in large quantities (nearly 2 per cent of some natural gas is made up of helium), the British Government put into operation two helium plants in Canadian gas fields. Here, under the direction of Sir William Ramsay, helium was prepared from natural gas, thus affording one of the comparatively few instances in which the discovery of an element and its practical employment are credited to the same man. Natural gas fields in the United States, however, were more extensive and richer in helium. In 1918 Dr. Moore took charge of helium extraction plants at Fort Worth and Petrolia, Texas, and by the signing of the Armistice there was on hand some 147,000 cubic feet of the hitherto rare gas. Before the War, helium cost $1,200 per cubic foot. Its present cost per cubic foot is about three and one-half cents.

The process of extracting helium from natural gas depends upon the fact that the other constituents of natural gas liquefy before helium. At 300 degrees below zero, for example, the other gases are liquid, and helium, still in gaseous form, is readily separated from them. In addition to his work with helium, Dr. Moore has also popularized the use of mesothorium, from which is made the luminous paint on watch dials and airplane instruments. Dr. Moore showed that mesothorium could be used in industry as a substitute for radium, which would therefore be conserved for medicine. Born in Cincinnati, Ohio, the son of a minister of the Christian Church, Dr. Moore was educated in England and France. In 1886 he entered University College, now part of London University, and there, under the great Sir William, began his studies in the field in which he is an international authority today.

XUM

PORTRAIT OF ALBERT HENRY WIGGIN—*BY CARL LINK*

Biggest Banker

Portrait of Wiggin of the Chase.

MR. ALBERT HENRY WIGGIN is a gentleman with an inexpressive countenance who prefers poker. There are other descriptions. He is a rich man with a wife, two daughters, and a number of etchings. He is a Bostonian (or thereabouts) who lives in New York; Greenwich, Connecticut; and Yeaman's Hall, South Carolina. He is tall, stout, and sixty-two. He is the banker with a million friends. He is Al to more people in Wall Street than anyone else in Wall Street is Al to—or Bill to, or Jack to, or George. He is the country boy who made good, and the minister's son who made millions, and the self-made man. He is the golfer who wins from a three down and four position. He is the newspaper reader who can read all the morning papers in New York from weather to want-ads (or from girl-gunman picture to girl-gunman picture) in practically no time at all. (And does.) He is Mr. Seward Prosser's idea of a "big, jovial, wholesome boy." And he is also the chairman of the governing board of the largest bank in the world.

But chiefly he is the gentleman with the extremely inexpressive countenance who prefers poker. Poker is by all odds the greatest American contribution to the technique of living. It is only a gambler's art to gamblers. Most Americans play it for the game, not for the money. Mr. Wiggin plays it for the competition; he loves to win. And competition comes as naturally to him as to a schoolboy out for the football team. He is a very energetic, healthy, courageous, insensitive, intelligent man. He believes in himself. And it gives him pleasure to excel.

Consequently, and given his very considerable advantages, he has excelled with ease. From the time, thirty years ago, when he left Boston and the raw coffee-roasting smells of State Street and the northeast fogs, he has been a figure in New York. He has had his misfortunes. He does not always choose men well, and some he has chosen very badly. But for the most part he has gotten on. He has pushed the Chase National from assets of $4,000,000 and deposits of $52,800,000 in 1904 to its present position as the world's largest bank, with total resources of $2,800,000,000, and himself from vice president to heights so remote from ordinary bank officialdom that, like newly discovered mountains, they have been given a new name. The growth of the bank has been largely accomplished by the absorption of other banks and his own eminence in Wall Street by the displacement of other men. And the result is a matter of satisfaction to all concerned. Even to the displaced executives. For Mr. Wiggin combines, with a rather well-cooked firmness of purpose, a kind of tact which makes the very objects of that purpose like it. During the panic of 1907 he is said to have handled older and richer men so skillfully that few of them were aware of the fact they had been touched, so skillfully indeed that the elder J. P. Morgan, who in that great crisis relied almost exclusively upon the elder J. P. Morgan, and occasionally upon the young Mr. Henry Pomeroy Davison, began to rely on Albert Henry Wiggin as well.

But Mr. Wiggin's most brilliant successes are much more recent than the year 1907. In October, 1929, operations upon the New York Stock Exchange, as the newspapers have had occasion to remark, were somewhat irregular. Gentlemen with large commitments were anxious to secure loans from their bankers, and bankers were not always able to satisfy the wishes of their clients. Confidence, in the phrase much used at the time, was impaired, and it began to look as though almost anything might happen. There were bankers in the consortium formed to support the market who were even inclined to close the Stock Exchange and go home to bed. But not Mr. Wiggin. Mr. Wiggin was not then the chairman of the governing board of the largest bank in the world. He was merely the chairman of the board of directors of the second largest bank in America. But the situation was made to order for him. What was required was an inexpressive face and the appearance of unlimited confidence backed by the appearance of unlimited funds. All of which Mr. Wiggin had. Whether he actually had either the limitless confidence or the limitless funds, it would not be Hoyle to ask—though it is known that the Chase was then in a remarkably mobile, lean, and strong condition. He refused to hear of the closing of the Exchange. He let it be said up and down the Street that Chase had money to lend. And he stood by his clients with a loyalty and a courage which are not so common in business as altogether to escape notice when they do appear. The result was that he emerged at the end of 1929 with an enhanced personal reputation, a strengthened bank, and various other appurtenances of victory, including the shoes of Mr. Charles E. Mitchell. Which last he has worn ever since with both dignity and grace.

A story told in the Street at the time indicates that Mr. Wiggin is as adept in the more finished maneuvers of the American game as in the more obvious ones. Toward the worst of the slump he was called on the telephone by a gentleman well known in financial circles, whose banking business it would ordinarily be most interesting to have, and was asked for a credit of almost impossible proportions. This gentleman had already, as Mr. Wiggin surmised, called upon a number of other banks and been refused. And Mr. Wiggin had a presentiment—what is known elsewhere as a hunch. It occurred to him that the inquiry might be meant rather to sound out the waters than to produce immediate results. And, acting upon that presentiment, he blandly acquiesced. The credit thus established was never used.

With a highly exciting and highly competitive profession, it is not surprising that Mr. Wiggin has little time for anything else. He is no more interested in politics or public affairs than most successful men of business, which is to say that he has opinions only on such problems as touch himself. He has never concerned himself greatly with the art of spending money, and neither his houses nor their contents are famous. His real interest outside his business is his friends. Some ten years ago Mr. Wiggin observed in a magazine interview: "Friends don't make a man, but if a man has the right qualities, the right personality, the right caliber, he cannot help making friends; they just feel drawn to him." Mr. Wiggin seems to have those qualities. They just feel drawn.

XUM

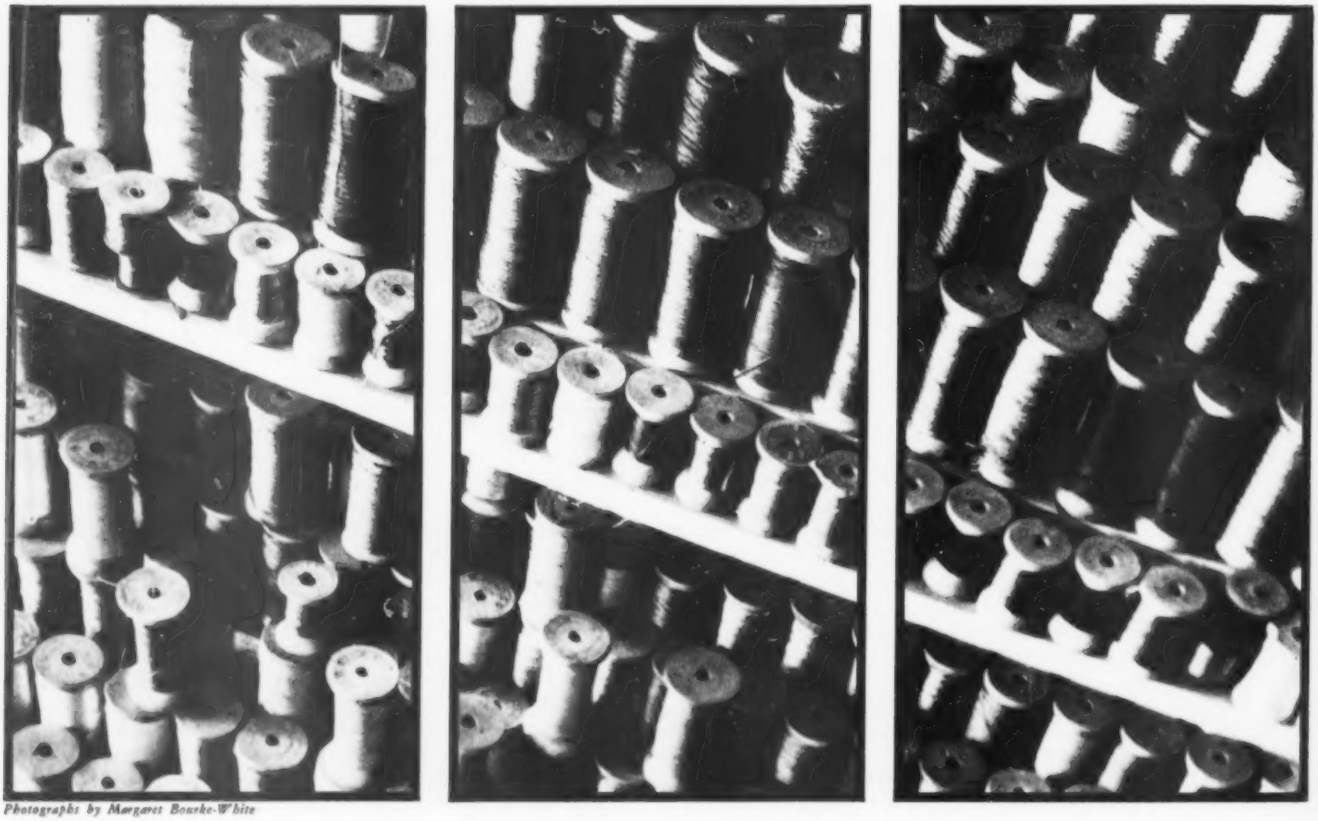
Cloak & Suit

The country's fourth largest industry is at the mercy of two forces—labor and a woman's vanity. Together, they keep it without leadership and without stability.

THE garment trade of the United States, the fourth largest industry in value of products, is no dinosaur. Rather it is a protozoan colony. To become a manufacturer in any of the three industries which exceed the garment trade in size requires enormous capital. No Gary or Schwab, no Swift or Armour, no Ford or du Pont or Sloan could hope to operate with a financial reserve that can be written in four figures. But one may become a full-fledged garment manufacturer with $5,000. And many do so. Hence it is that the workers in the garment trades (341,200 as compared to steel's 361,300) are scattered throughout thousands of establishments. And hence again, the picture it presents is not the portrait of a business giant but a mass picture of thousands. A picture, indeed, of a race. And its story is the story of that transplanted people.

It is a story of needles and tired eyes. Of street brawls. Of suave salesmen. Of sneak thievery. Of the parallel development of the automobile and the motion picture. Of the oppression of the Jews in Russia in the year 1882. Of Hattie Carnegie's and Sacks' and Klein's. Of the new architecture. Of the sweatshop. Of E. W. Fairchild, the gentile king of American Jewry. Of Benjamin Schlesinger, the gaunt and snarling wolf who is president of the International Ladies' Garment Workers' Union. Of A. E. Lefcourt, who has altered a considerable portion of Manhattan's sky line. Of Jack Amsterdam who . . .

Well, take Jack Amsterdam, for example. He is one of the big shots—Amsterdam, Inc., 498 Seventh Avenue, Manhattan. His winter line is about $150 and up, his summer line about $79.50 and up. Gowns from his factory are draped on models in the very best stores in the country. He is a hard worker, and has great enthusiasm. But his wife, some say, is more than half the brains of the business, and she is very attractive. A decade ago, or a little more, runs a story well-known in the trade, he was nearly broke. He had borrowed and borrowed until the patience of his creditors was exhausted. They were preparing to descend upon him when the time came to buy spring models. He must have a Line to show the trade and it must be a good Line. He must have it and sell it to get money for the creditors. He must buy models in Paris at



Photographs by Margaret Bourke-White

hundreds of dollars each—with no money. So he took his wife to Paris, to one of the most expensive suites at Claridge's. In Paris was a friend, a wholesale jeweler from whom he borrowed pearls, diamonds, emeralds to hang upon his wife. American creditors and the Paris *haute couture* were breathless, hesitated to mention the money he owed them. When any did, he grew annoyed at the interruption of more important business by insignificant matters which could just as well be put off until his return to America. "Some other time when I am not so busy," he would say. And he would add, "Come up to our suite at Claridge's and have a drink. I want you to meet Mrs. Amsterdam." Thus he got the models and his Line—and sold it and got enough money to pay the creditors. Which is the way the story should end. But Amsterdam required a dramatic *dénouement*. So he invited the wolf pack to dinner. And there to each he paid his due while he told them collectively how he had financed himself on their money.

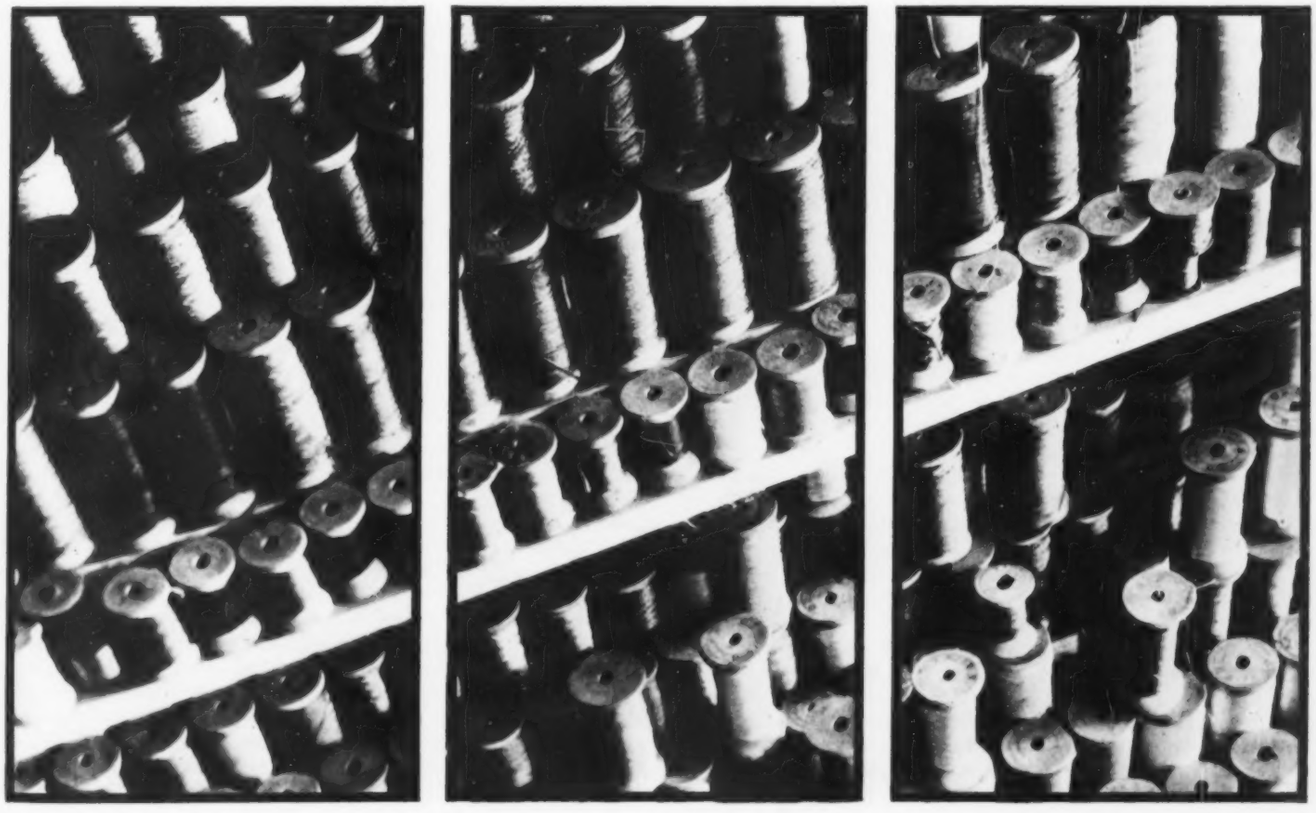
There is Henry H. Finder. He is magnificent in a strike. He is a German Jew as once were all in the garment trade. He has a hot head, and in it one good eye. The other is generally supposed to have been damaged in a fight. He makes good clothes and plays good golf. He drives a Lincoln which was given to him by his associates in the strike of the year 1926. (The Lincoln is the garment trade equivalent of the D. S. C.) At one time he was head of the Industrial Council and ruled the cloak and suit trades like a czar.

Leo Del Monte (Del Monte-Hickey) is about five feet six. He looks like a movie villain and is known throughout the trade as "the man with the iron mustache."

One can penetrate to the offices of Benjamin Schlesinger, the president of the powerful International, and he will talk—if he wants to. His black eyes scan the visitor quickly but turn away again as he talks. His hands move nervously. Now and again they tug at his shock of black curls. His face is thin and swarthy, almost handsome. He is a bitter man, passionate in his devotion to his cause, supremely vain in his identification of his cause with himself. He has been compared to a wild animal who has fought his way through the pack to his prey and stands over it snarling, sure that the pack is waiting to steal it from him if they can, to fight if they must. He is wary, defiant of them. The prey is his power; the pack is the world. (The power that now is his, for the second time, was wrested from Morris Sigman by the Communists in 1926.) He is not an old man, but he lives in fear of death. For he is said to be ill of a strange and rare malady. Schlesinger would scorn a familiar ailment, would refuse to die of pneumonia.

William Bloom has a coat of arms, the only coat of arms in the trade. He is a smart, handsome man and takes great pride in his clothes. People frequently stop to look at him as he walks down the street, so faultless is his attire. Everyone in the business likes him and admires rather than envies his success. He belongs to the new school. His name is associated with sport clothes. But the names of some of his companies, Beaucraft, Germaine-Monteil, etc., are associated with all branches of the garment industry. He makes furnishings for men as well. A lounging robe for big Bill Edwards was made in a William Bloom establishment not long ago. The tailor who was to take his measure approached him. "You'll need more than one of those," Edwards said, pointing to the tape measure. The tailor laughed, but did not believe. He found that Edwards was right—the sixty-inch tape would not meet around the gargantuan midriff.

Jacob Sperber is rumored to be about to retire any day and live on the money he has made in cloaks and suits. He is, in



HE CUTS THE GARMENT . . .

. . . FROM THESE . . .

. . . SHE PRESSES IT WHEN FINISHED

other words, about to join the more select company of ex-garment makers—the Knopfs (publishers), Abraham Lefcourt (real estate), Saul Singer (vice president, Bank of United States), William Fox (ex-movie czar). Already he is partly withdrawn from garments, devoting much of his energy to real estate and charity. He makes generous contributions to the Boy Scouts and to the Jewish Federation. But he is still busy making cloaks and suits—and playing pinochle, which is one of the characteristics of the trade.

George Jablow plays pinochle, too. He was a cutter and is now owner (with Samuel Epstein) of Aaron Goldstein & Company, one of the most successful cloak and suit houses and one of the foremost sponsors of the Separate Summer Season for women's clothes. He knows that life is a joke, but he is level-headed and not easily excited. People seek his advice.

Hundreds of others are encountered in a search for the Gary, the Ford of the garment trade.

There is David Dubinsky, who was sentenced to a Siberian prison camp when he was seventeen. He finally escaped to America and got a job in a garment factory. At thirty he became manager of Local 10, a cutter's union and one of the most powerful locals in the country. He is "the baby of the Unions" and after eight years is now secretary-treasurer of the parent union of Local 10, the International Ladies' Garment Workers' Union.

The farther you look, the more you will find. More and more labor heroes, more and more owners of small plants. For the largest plants in the industry are small. All of them doing the same thing in the same way. And all different. And all revolving about one sun, the gentile king of a Jewish industry who is not the dominant figure in the industry because, queerly enough, he is not in it.

His importance in the trade is not self-assumed, as much garment trade importance is. It was the *Jewish Daily Forward* who called E. W. Fairchild, a fifty-five-year-old gentile, king of the Jews. From his offices on Thirteenth Street, far from the Garment Center, he quite literally directs the activities of the entire garment trade. His two most important publications, *Women's Wear Daily* and the *Daily News Record*, are read by everyone connected with either manufacture or sale of garments, everyone who can read English. His news service, exceeded in the size of its staff by only four of the great news-gathering agencies of the world (Associated Press, United Press, Reuters, and International), forewarns the trade of style changes and announces all fabric, color, and style developments. In Paris his representatives are accorded advance showings by the Parisian couture so that complete reports may be carried in his publications on the day of the openings. From four seats in the gallery of Congress, legislation affecting the trade is reported. In five other periodicals, published in New York, Chicago, Paris, and London and in many series of analyses and charts he provides all the knowledge and forecasts that the trade requires. He, as much as any man, may be called the Will Hays, the Kennesaw Mountain Landis of the garment industry. Yet he is not the industry. Nor are Sperber, Bloom, Schlesinger. The industry is more truly a half million simultaneously flying needles and a million tired eyes. The basic week of five eight-hour days has done much to save the eyes, but eight hours of staring at a flashing needle and a trail of stitches is not the use for which the human eye was designed.

Hands and horses

In the three larger industries, the workers are better paid. (Garment workers average $24.51 a week. Workers in stockyards and slaughterhouses, $26.09, in steel mills, $32, in automobile factories, $32.91.) And though many of them do not have the eight-hour day and most of them do not have the five-day week they do have power-driven machines which lift and carry the greatest burdens. If each horsepower unit could be replaced by a living horse, the comparison would be graphic. Each wage-earner in slaughtering, steel, and motors would have nine horses to help him, but in the garment trades four men would have to share one horse. In terms of production, 739 horses are required to haul in a million dollars of products in the three larger industries, but only twenty-nine are required in the garment trade. Although the United States Department of Commerce reports that in its list of

DAY LONG, AND IN BUSY SEASONS UNTIL LATE AT NIGHT, FINISHERS ASSEMBLE THE PIECES OF GARMENTS WHICH HAVE COME TO THEM FROM THE CUTTING TABLE. FINE GARMENTS REQUIRE HAND WORK (AS ABOVE AT GERMAINE-MONTEIL). WHEN FINISHED . . .

fifty-seven only three industries exceed the garment trade in value of products, forty-two are shown to consume more power.

Manhattan, greatest of markets

But this is not because the typical garment factory is located beyond the sound of humming dynamos. On the contrary. Of the 341,200 workers in the industry, 94,848 work in Manhattan, which means that every seventeenth person you pass on the street in that crowded borough is a garment worker. But this curious trade is even more concentrated in its locale than this preliminary step indicates. For these 94,848 persons with very few exceptions work within the district bounded on the east by Seventh Avenue, on the north by Times Square, on the south by Pennsylvania Station and on the west by Ninth Avenue (although the western frontier is changing, creeping slowly but steadily toward the bank of the Hudson). Wherefore, these people may all be found during any working day, herded together in an area of about 150 acres, 632 of them to each acre. And because upon these same acres also stand many such architectural giants as the New Yorker Hotel

. . . THEY GO TO AWAIT THE ARRIVAL OF BUYER OR JOBBER ON ONE OF THE TENS OF THOUSANDS OF GASPIPE RACKS. CHILDREN'S DRESSES (AS ABOVE), SUITS, CLOAKS, DRESSES OF HIGH AND LOW COUTURE, A HUNDRED MILLION A YEAR

and hundreds of warehouses, restaurants, banks, etc., the 94,000 garment workers must be piled one on top of another. They are piled fifteen to thirty layers deep in skyscrapers that have been built on garment-earned money by Abe Lefcourt, Saul Singer, Mack Kanner and others. In this Garment Center one may see more closely concentrated than anywhere else, New York's new architecture. The setback building line, the high flung balcony and parapet frame the streets. Thousands of windows flash in Manhattan's adulterated sunlight. And behind each window are banks of spools, long cutting tables, long ranks of sewing machines, ornate showrooms, narrow shoulders and unshaven faces bending over films of fabric.

In Thirty-sixth Street they congregate at noon. They seem to be the ultimate in the thug, the shenango, the rogue's gallery type. They shout and gesticulate, bargaining with prospective employers in an informal employment market. Some lean against barber poles or carved cornices, reading Yiddish newspapers, munching sandwiches and dill pickles. The women workers mostly stay indoors. Many of them are middle-aged, sallow. Their bodies are tired, maternal. Fingers, used to dodging the flying needle and to plucking fringe, are never still. They continue to play with scraps of cloth, plucking, folding, fraying. Predominantly Russian Jewish are the crowds in the street and in the shops. But in recent years the number of Italians and negroes in the trade is constantly growing.

From New York's 94,000 come $1,439,213,761 worth of the industry's $2,573,900,000 total. Brooklyn's 17,380 workers add $58,831,922 to this figure. About 60 per cent of the clothes made in the United States.

The reason is implicit in the clothing business. Not only because the wealthiest retail market surrounds the Garment Center, but because it is to New York and to the Garment Center itself that all buyers go to order their stock. Jobbers want overnight deliveries. The garment factory across the street or upstairs gets the job.

This wealthiest market, so far as clothes are concerned, is upper Fifth Avenue and its tributaries. Within it lie Bergdorf Goodman, Hattie Carnegie, Saks-Fifth Avenue, and many another swanky shop. Most of them are retailers, buying part of their stock on Ninth Avenue and part of it on the Rue de la Paix. Hattie Carnegie, however, has her own garment factory. She operates one of the trade's swellest inside shops. In her plum-colored stucco building on Forty-ninth Street the visitor trips over the feet of the smartest and proudest of New York's smart and proud.

The biggest market, the market in which clothes move fastest, is a subway ride away, at Union Square. There S. Klein, in a confederation of characterless buildings, has built up a business of amazing proportions. His turnover is sixty times a year. Dresses may be bought for one dollar up. They hang upon gaspipe racks, literally in thousands. The customer messes and mauls until she finds what she wants. Enthroned at the end of each aisle, a guard with half-open eyes watches for shoplifters. Dresses may be tried on in a room which might be the locker room of a proletarian country club, so crowded, so informal is it. A $24,000,000 business was done by Klein in 1929. He will exceed $28,000,000 in 1930.

BEHIND EACH OF THESE WINDOWS IN MANHATTAN'S GARMENT DISTRICT, ROW UPON ROW OF GARMENT WORKERS

Others have followed Klein and thrive all about him. Ohrbach's is diagonally across the corner, and is probably second to Klein's in size. Hearn's, the hundred-year-old department store on Fourteenth Street and Fifth Avenue, two blocks away, is first cousin to Klein's in its dress departments. Their windows, one day this spring, showed smart, simple frocks: "Three Dresses for Six Dollars." These differed from those sold at the other end of the Avenue in the quality of the material, the depth of the hem, the finish of the work. There was nothing the matter with the style. For style is nobody's property. One man may buy and pay for it. It remains his until he puts it in his window.

From cloak to dress

There is, of course, a reason why this industry is so helter-skelter, why it dazzles its spectator and leaves him breathless. The reason is Milady, the American woman, and her accomplices are Conde Nast, the movie makers, and the makers of automobiles.

To understand present conditions, one needs to trace the industry back to its nativity, which means that first of all one must forget the existence of gowns and dresses and remember their predecessors, the cloaks and suits.

In the 1840's cloaks and suits were not, commercially.

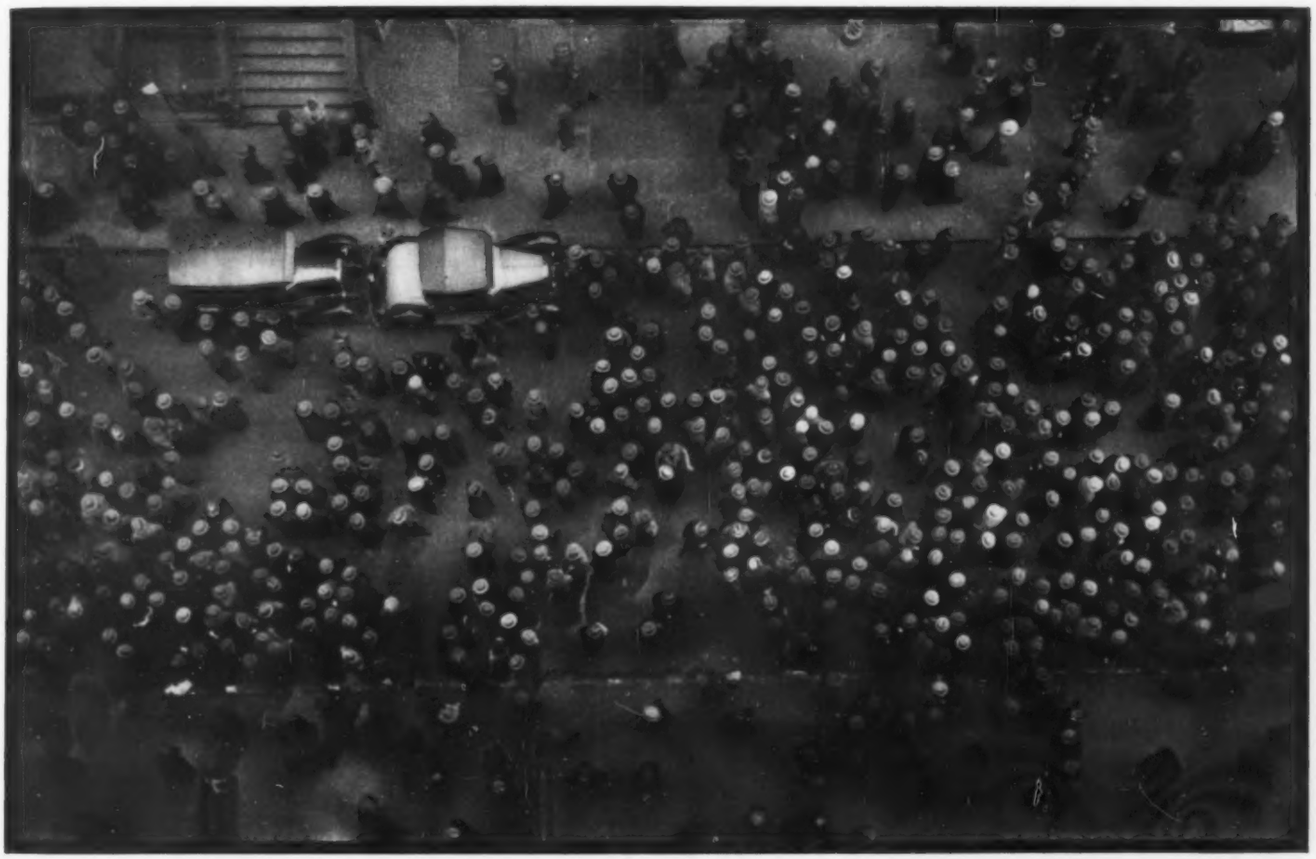
That was the day of piece goods buying (even of weaving in many quarters) and home sewing. The only women's garments bought in stores in any quantity were shawls and jackets. These were imported from Germany and sold largely by Germans and German Jews. Many of these retailers had custom tailors in the back rooms or upper floors of their stores who made apparel occasionally for the wealthy trade. This was the condition that had existed since pre-Revolutionary days and held the well-formed embryo of the industry which has developed, even to the importation of fashions from Paris. (But importations in those days were in miniature on dolls. They were known as "babies.")

In 1846 the first clumsy sewing machine was made.

Immediately, with its aid, the larger stores, which had been the most extensive importers of jackets and shawls, decided to make their own garments instead of importing them. By 1860 the industry had become of sufficient importance to appear in the census (188 establishments, 5,739 workers, $7,181,039 worth of products). Coincidentally, the vogue of kerchiefs and shawls had died, and the cloak and mantilla came in—and the hoop skirt, which was a nuisance to make at home. Wests, Bradley and Carey's Hoop Skirt Works on West Twentieth Street, New York, converted "steel rods into finished skirts" and the "steel for the rods was imported from the famed works of Krupp, Germany." Here were employed as many as 1,600 hands, about 30 per cent of the employees in the entire industry, and certainly the closest approach that there has ever been to a General Motors in the clothing trade.

During the ensuing twenty years the new industry grew rapidly, attracting more and more men from retailing. Paramount among them was the still remembered Meyer Jonasson. He forsook retailing for manufacture in 1874 and dominated his new field. The Gotham cutting knife was developed, and women were extensively replaced by men among the employees. (The number of women in the trade increased from 22,253 in 1860 to 25,913 in 1880; the number of men from 2,594 to 12,963.) Most important in this period, however, was the effect of the conditions in Russia in 1882, which drove Russian Jews to America in tens of thousands. Since the birth of the industry, the German, Hungarian, and Austrian Jew had been dominant in both the manufacturing and retailing fields. In the eighties new thousands of Jewish immigrants were job hunting, particularly in New York, then as now the country's garment capital. Many of them were facile tailors. All of them were stoical, dogged workers thankful to have escaped from Russia with their lives, willing to work at the rates of pay then current (about 25 cents per garment, which made it possible for them to earn from $1.50 to $10 a week, with the majority earning about $3.00). This was the period in which the sweatshop was born and strikes and protests against workers' conditions were continuous.

In this era also, and in the two decades that followed, nationally known Lines were possible. Meyer Jonasson, for example, was a household name both inside and outside the trade though to his fame as a manufacturer that which he had acquired as retailer added much. While Milady pro-



THE "PLAY STREET" OF MANHATTAN'S GARMENT DISTRICT (THIRTY-SIXTH STREET, BETWEEN EIGHTH AND NINTH AVENUES), CLOSED TO TRAFFIC AT NOON, CROWDED WITH JABBERING, GESTICULATING MEN

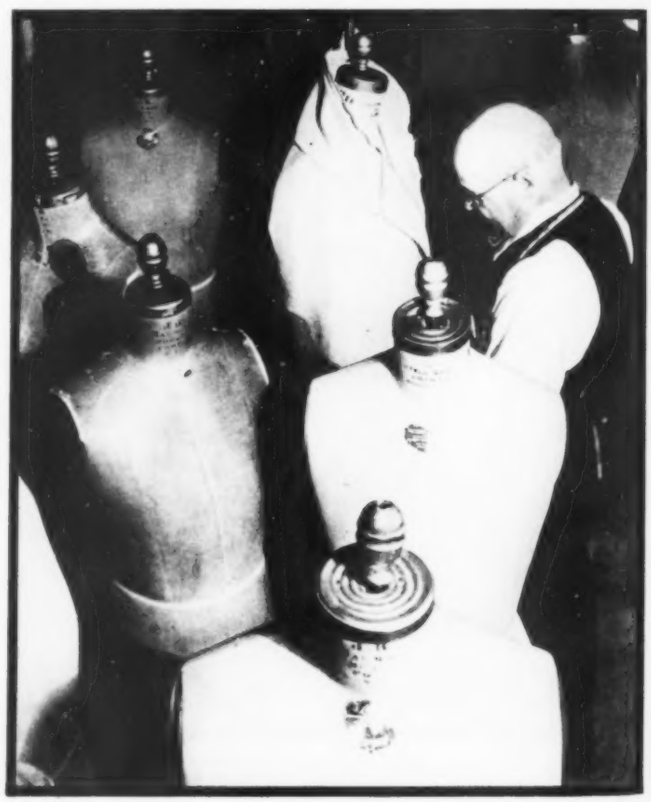
gressed from hoop skirt to Second Empire to bustle to straight front to leg o'mutton sleeve to wasp waist, trade names and large establishments thrived. Whether or not a manufacturer's line was what is now known as a "wow" made little difference. Dead stock in New York, Pittsburgh, Cleveland, and Chicago sold out quickly in Poughkeepsie, Beaver, Youngstown, and Peoria. Garment makers thrived. Though the New York Tenement House Law had curbed home work upon garments and to a considerable extent stamped out sweatshops of the worst type, dark and unsanitary lofts so crowded that workers could scarcely move from their chairs were still common to the industry. Ready-to-wear garments were still chiefly of the heavier materials. The dress business, now busiest of all, was still unborn. Men had become the vast majority of the employees. The Union, the International Ladies' Garment Workers' Union, was organized but was not yet powerful. And ladies' dresses for the most part were still made at home. This was twenty years ago when the neighborhood dressmaker was in her heyday. There were, by 1909, 4,558 establishments, 153,743 workers in the trade; their products were valued at $384,752,000. Then the industry was huge and hectic, but today's bewildering state had not yet developed. Last year the industry could count 7,588 establishments, 154,459 workers, producing women's garments to the value of $1,500,000,000. Four major phenomena rushed this evolution from unity to hopeless multiplicity:

First.—The closed motor car and the closed (centrally heated) house have made lighter fabrics for women's clothes practical because comfortable. Thereby the suit, as it was once known, is languishing. Instead Milady has an ensemble made of anything from a light weight woolen to lace. Because all women have many dresses and because the neighborhood dressmaker is now almost as rare as the dodo, the dress business, natural child of the shirt waist business, which was born in the nineties, is now most important.

Second.—The movies now show the housewife, debutante, and parlor maid in Poughkeepsie, Beaver, Youngstown, and Peoria just what Milady is wearing in New York, Pittsburgh, Cleveland, and Chicago. Conde Nast's *Vogue* and many another fashion periodical circulate in quantities never before heard of. The motor takes Milady everywhere. No longer is any line salable anywhere unless it is a "wow."

Third.—During the War and after it, the manufacturer found it profitable to buy large quantities of raw material and manufacture his garments in advance because the cost of both labor and materials was constantly and steeply rising. At the same time, retailers were cautious in placing orders, fearing a break in prices. The consequence of this was the inauguration of buying by the retailer of garments from the manufacturer's stock. Many manufacturers promptly ceased to be manufacturers and became jobbers, eliminating even their cutting departments, buying the garments ready-made from sub-manufacturers. These sub-manufacturing or contract shops multiplied rapidly. Each jobber needed to have access to sufficient number of them to make possible overnight filling of orders. Thus the large manufacturer, for the most part, is no more. In his place are hundreds of jobbers with swanky showrooms and (because so little capital is required) thousands of contractors, each with rented sewing machines and scores of cutters and operators working like mad for a few weeks spring and fall, furtively dodging starvation in the weeks between seasons.

This is a condition to induce "sweating," and sweating exists in the industry still, though conditions now sufficient to brand a plant as a sweatshop would have been welcomed as a great relief at the turn of the century. But the present



ALEXANDER ARCHIPENKO HAS MADE THE DUMMY A THING OF BEAUTY AND A JOY FOREVER FOR SAKS-FIFTH AVENUE (LEFT). BUT, THOUGH THE NUBIAN CERAMIC MAY ENHANCE THE BEAUTY OF THE FINISHED GOWN, IT WOULD SERVE NO USEFUL PURPOSE IN THE GARMENT FACTORY. NOTHING HAS YET THREATENED THE SECURITY OF THE OLD-FASHIONED DUMMY IN HER OWN FIELD. UPON HER SHOULDERS ARE DRAPED FOR FITTING AND INSPECTION THE SWANKIEST AS WELL AS THE CHEAPEST OF CLOAKS, SUITS, AND DRESSES. (RIGHT) EACH GARMENT AT AARON GOLDSTEIN'S MUST PASS RIGID INSPECTION

conditions are not meekly endured. Only last month vigilant, passionate Mr. Schlesinger denounced Baltimore as the "mecca of the sweatshop system," charging that young girls were being paid only $6.00 for a sixty-hour week. Effort to improve working conditions is expended constantly and with increasing success.

Fourth.—Paris. As long ago as the American Revolution, the "babies" above referred to were imported and copied. Before 1776 these came mainly from London, but during the Revolution none but Tories would ape the British, and French "babies" began to be shown. Importation of the gowns themselves had become important by 1827, as reference to newspaper advertisements of the day will show. In Boston in that year a merchant advertised "a complete assortment of new and fashionable goods . . . Rich ball dresses, Lace dresses, Embroidered French Cambric and sheer muslin dresses, Mantles . . . a few splendid French embroidered Muslin and Cambric Dresses worth from 35 to 55 dollars. These being lately imported, are the most modern style and truly elegant."

Today hundreds of buyers, virtually all manufacturers (a few important manufacturers still exist, such as William Bloom, Aaron Goldstein, A. Beller, and are now known as "inside shops," by virtue of the fact that the work is all performed in the plant itself), and many, many jobbers go to Paris for the openings each season. Each man brings back with him models, for which he has paid $300 or more. This model no American woman would wear. Nor would any French woman. It is to the purchaser what shorthand notes are to a stenographer. It may be made from any kind of material, the cheaper the better. If the original had fur anywhere upon it, the model will indicate it with white muslin or sleazy crepe. Each model is a trade secret for its owner. He hides it carefully. When he is home again, his designer will *adapt* it, rarely *copy* it. The inexperienced eye is often unable to detect any similarity between the model and the copy. But no matter. The dress qualifies as a Lanvin or a Patou or a Worth because the American designer (drawing, likely, $10,000 to $25,000 a year in salary) had a twist and fold of cloth for which his boss paid $500 hanging in front of him as he worked. The similarity may not extend beyond the general arrangement of buttons or the flare of a cuff.

The birth of a "copy" is attended with great secrecy. The manufacturer or the jobber knows that if his new number is particularly "hot," it will be recopied (actually copied this time) and on the market at $10 less than his price in a few days. The theft, manufacture, and retail sale of a style idea has been accomplished in three hours.

Thus copy must follow copy in rapid succession. Thus manufacturers figure the life of a style to be two weeks. And thus, with competition so keen, a bad guess, a Line that is a "flop" may readily ruin a house which must always have most of its eggs in one basket, though it has a new basket every fortnight.

Wherefore, today's hodgepodge.

Wherefore, the saying that every garment man goes eventually into real estate. As soon as he has made enough money, he does it. As soon as he goes bankrupt, he does it. If he has any time while he is still in the garment business, he turns to the hectic real estate game for peace, quiet, and relaxation. Real estate or pinochle, or Wall Street or the theatre racket.

The industry looks ahead

In Union headquarters, at gatherings of employers' associations, and where two or three social economists are gathered together, heads are wagged today about the future of this berserk industry. With its roots in the Garden of Eden ("When Adam delved and Eve span, who was then the gentleman?"), the garment tree has suddenly become a banyan, an exceedingly tangled banyan that persistently defies pruning and cultivation. And nobody nowadays wants a banyan.

Communist leaders, during the brief era in which they dominated garment labor, declared that they had a cure-all up their sleeves. The cure-all was implicit in the theories of Communism. When the Colonel's lady and Judy O'Grady are both wearing clothes of the same material and cut, when the foibles of style are no more, then it will be possible to develop a Dunderbeck machine into one end of which sheep and cotton plants are fed, from the other end of which will issue lamb chops, cottonseed oil, and the uniforms of the *Internationale*. In a proletarian and utilitarian Utopia the woes of the garment trade will vanish.

All others seem convinced, however, that not even social revolution will stamp out Milady's vanity and her deep need for novelty. The idea of practical adaptation to the apparel field of the principle of mass production is fantastic while she persists in feeling that a dress is worthless once she has seen its duplicate, and while production of new fabrics and designs

HERE, WORKING WITH LACES AND LIGHTWEIGHT FABRICS, WOMEN HOLD THEIR OWN IN THE INDUSTRY

continues at its present dizzying speed. These two influences, exerting pressure fore and aft, have the industry at their mercy.

Concurrently, a constant restriction is laid upon prices and wages by the mere fact that nearly any woman can make her own clothes. The fact that in this decade few of them do make them is only true because the potential economy of home dressmaking is outweighed by the convenience of buying ready-made garments at current prices.

The conditions of labor have been much improved by steady battling. Strike, lockout, and injunction have been utilized again and again. The International Ladies' Garment Workers' Union is perhaps the most effective labor organization in the country, and it enjoys the full confidence of the employers. The strike of last January and February was all thrashed out beforehand, even to the details of duration and settlement. The employers were glad of the coöperation of the Union in driving out cheap competitors. The stake for them was as great as the stake for labor. The riots which attended the strike came to a climax in the death of Jacob Rothenberg, an open shop manufacturer, after an assault in which his skull was fractured. Friends of Rothenberg insist that he was the victim of plan and not of circumstance, but nothing more than the general accusation has ever been made publicly. Official Labor regrets the incident. Somewhere their plans for a peaceful strike ran amok. However, disturbances were confined to the garment district, and few outsiders knew of them except as they were reported in the newspapers. The strike was settled to the satisfaction of both parties. No more will employers who belong to the Industrial Council of Cloak, Suit, and Skirt Manufacturers, the Merchants' Ladies Garment Association, and the American Cloak and Suit Manufacturers' Association purchase work from contractors who do not conduct Union shops; Labor has been given a forty-hour, five-day week and week work only, definite minimum rates of pay, obligatory overtime pay, legal holidays, sanitary standards. The strike was financed by a bond issue floated last year. The principal in drawing up this agreement was Raymond V. Ingersoll, impartial chairman of the Cloak, Suit, and Skirt Industries, whose reputation as a successful mediator in many a dispute has gone far beyond the trade.

ON SUCH A MACHINE ARE FABRICS "PINKED" TO PREVENT FRAYING OF EDGES

The money is being collected today for the next two strikes on the program. Probably the Union heads already know the terms of settlement. The Union will fight until it wins. It is used to fighting, and likes it. For it is fighting for a cause. In 1924 a Communist faction seized control of the International. The Right Wing, to which Benjamin Schlesinger belongs, fought for two years to regain it, sold its bank, went $2,000,000 into debt, and won. Today, the Union is larger and stronger than ever before. It dominates the industry. It holds the future of the industry in its hands—except for Milady.

This is Labor's day. Labor's and Milady's. The employer in the garment trades must meet the demands of both, and the future holds promise of a continuation of the same conditions, so long as these two are in the saddle. Which must, it seems, be always. Milady will continue to make her imperious demands. Labor will continue to make its own. The women's garment industry will remain: Eight thousand small manufacturers. A hundred million garments a year. Two-thirds of the Russian Jewish population of the United States (in retail and wholesale branches). Needles and tired eyes.

A Note on Men's Clothing

Conditions in the men's branches of the clothing trade have followed a course more nearly parallel to that of other industries. The "gent's tailor" frequently continues to enlarge his shop, hoping to become in time a Fashion Park, a Hart, Schaffner & Marx, a Kuppenheimer, a Richman Bros. The securities of such firms are listed on the big board, though there is no exchange which lists the securities of women's garment factories.

The manufacture of men's and boys' clothing is not centralized in New York, or even in the East. Rochester, Chicago, Philadelphia, Baltimore, Boston, Cincinnati, Cleveland, St. Louis, and Milwaukee are all important producing points, and, together with New York, provide 83 per cent of all men's clothing. This is a percentage only slightly larger than Manhattan's percentage of the women's trade. The latest available census figures value the men's industry at $932,182,000 as compared with a $2,573,900,000 clothing total, a little more than one-third.

In recent years, with the increasing variety of men's clothes, the vogue and the season have come to mean more to the manufacturer. There are those who forecast an approximation of the conditions in the women's trade for the men's trade: the rise of the jobber, sub-manufacturer system, and the correlative decentralization.

Sidney Hillman, head of the Amalgamated Clothing Workers (the men's trade equivalent of the International) has been declared to have the "finest brain in the labor movement." More than 75 per cent of the workers in the men's trade belong to the Amalgamated; there are Amalgamated banks in Chicago and New York which have lent millions of dollars without collateral to union members; the union has financed employers through critical seasons, has built coöperative apartments wherein the rents are $11 per room per month. The career of labor has been stormy in the men's trade, and the potentialities for trouble and disunion are ever present, but for the moment, conditions are far more stabilized than they are in its sister industry.

THE IMPORTANCE OF PESSIMISM

• A PINCH OF PESSIMISM is necessary to the creation of fine advertising. It is the salt on the egg.

• For your true pessimist will point out opportunities for improvement long after an optimist, in his enthusiasm, has settled back satisfied.

• Many an advertising campaign that was good—really good—to begin with, has been spurred on to greatness because a note of pessimism has mingled with the cheers.

• In this organization, when both the optimists and the pessimists are enthusiastic about a new campaign, it is then ready to show to the advertiser. But not before.

YOUNG & RUBICAM, INC.

ADVERTISING ■ NEW YORK ■ PHILADELPHIA

XUM

Soy Beans

Which may be glue, milk, cheese, sauce, varnish, axle grease, fertilizer, soap, soup, buttons, artificial leather, enamel . . .

RABBITS adore them and striped blister beetles are dangerous to them. The Emperor Shen-nung mentioned them with respect in the *Pen Ts'ao Chin* written by him in 2838 B. C., and they are being mentioned with respect today by such men as Mr. W. J. Morse, Senior Agronomist, Office of Forage Crops and Diseases, Bureau of Plant Industry, U. S. Department of Agriculture. Infinite and confusing are their varieties, and their uses are legion. We speak of the soy bean, important as rice to Japan and China, economic gauge of the province of Manchuria whence issues half the world's production, and in the United States last year grown to a $70,000,000 harvest. During the War in Germany, it is said, a dinner was served composed entirely of the soy bean in various of its manifestations. It is an ingredient of Heinz and Lea & Perrins' Worcestershire Sauce. You are apt to find its oil in your soap and oleomargarine. Your comb or your buttons may be made from its plastic, satolite. You never order them at the Ritz, and one remembers no U. S. farmer complaining about his soy bean crop to the Senate. Yet roughly the soy bean may be made into almost anything. Without it there would be no agricultural Manchuria, and with no agricultural Manchuria there would be no South Manchuria Railway. It is important, but it is only a bean which does not jump. It is always yellow or brown or black or green.

Now a bean is a bean and you eat it in soup or Boston baked, or if it is a lima bean, with corn and you call it succotash. You might say that edibility is the bean's chief attribute, that the Platonic Idea of Bean is a plate of them, steaming hot. The soy bean, being bean, fulfills these expectations. But unlike other beans, it can be crushed into a sort of flour, and with flour you can make waffles or pancakes. You can even make soy bean milk by grinding in water and straining. And with milk you can make cheese. So in Paris there is a cheese factory which makes Rocquefort from soy bean curd.

Consider the bean. It will grow almost any place though in northern Manchuria it seems happiest. It is grown in the United States in nearly every state east of the Mississippi. It contains nitrogen, carbohydrates, secretes a valuable oil. Its milk has more proteins than cow milk and little danger of contamination. Its flour contains four and one-half times more fat, four times more proteins, half as much water, and nearly half as many carbohydrates as the flour of wheat. These chemical ingredients make it a food, more interesting, perhaps, than palatable. Though the milk is supposed to be good for one (it arrests cases of retrogression, causes normal growth), it has generally to be drunk sweetened with sugar. Soy bean sauces are better spiced. (For the Chinese taste Lea & Perrins' Worcestershire is too hot. The Chinese themselves make their sauces by exposing the crushed bean to sunlight and actually melting it. Certain Korean sauces are thus matured thirty years before they are considered palatable.) But if the bean's chemical make-up only indirectly contributes to its success as human food, it is nevertheless the basis of the bean's industrial importance. Because of its nitrogen, the bean is valuable as fertilizer and also as poultry and stock feed. And the bean's hereinbefore mentioned oil has proved of value to many a manufacturer of paints, enamels, lacquers, and even explosives.

Oil and cake

First step in the industrialization of the bean is the extraction of oil. Still today in China does the traveler see crude stone presses which roughly extract about half the bean's total oil content. The Anglo-Chinese Company at Harbin, however, and the Suzuki Mill at Dairen, which use chemical extraction, have now achieved a production tantamount to

William Thompson
IN MANCHURIA, COVERING SOWED BEANS WITH EARTH

Ewing Galloway
IN KICKAPOO, ILLINOIS, RAKING SOY BEAN HAY

Sunset is the Burglars' Sunrise!

SUNSET is the burglars' sunrise! Your night—their day! They work while you play or sleep! They laugh at locksmiths! They rob where they please—and take what they please!

The fact that you've never had a loss, or that you feel you live in a safe neighborhood, is no assurance that your turn may not be next.

An Ætna Residence Burglary Policy not only reimburses you for any and all articles stolen from your home but pays the bill for any damage done to your premises or property by those who come to steal.

Now is the "open season" for burglars! *Now* is the time to get in touch with the Ætna-izer in your community!

Ætna writes practically every form of Insurance and Fidelity and Surety Bonds. Ætna protection reaches from coast to coast through 20,000 agents. The Ætna Agent in your community is a man worth knowing. Look him up!

Ætna Casualty and Surety Company—Ætna Life Insurance Company—Automobile Insurance Company—Standard Fire Insurance Company of Hartford, Connecticut.

ÆTNA

ÆTNA-IZE

SEE THE ÆTNA-IZER IN YOUR COMMUNITY - HE IS A MAN WORTH KNOWING

100 per cent of oil content. The oil is to Chinese cooking what butter is to European. But Japan, always the greatest buyer of the Chinese bean, has imported much oil for use in fertilizer, soaps, and oleomargarines. In 1908, the Japanese banking-importing family of Mitsui shipped the first export of soy beans to England. This experiment, as many another of theirs, proved successful [FORTUNE, March, 1930], and England thereafter became a regular customer. Since then the oil has been widely used in European countries, and in the United States is today used by Sherwin-Williams Co., De Vos Co. Inc., and other paint companies.

As important as the extraction of oil and an inevitable concomitant to that extraction is the producing of the soy bean cakes. The cake, roughly, is what you have left after you have taken away the oil. High in nitrogen content, it is used extensively for feed and as fertilizer. Manchuria's approximate annual export is 2,240,000 tons of beans, 180,000 tons of oil, and 2,192,000 tons of cake (the beans are not often shipped in their original state). Again most of the Manchurian exports went to Japan. Japan, however, is developing an artificial fertilizer industry and producing ammonium sulphate believed to be superior to the bean cake for the requirements of Japanese soil. If this market should be closed to China, it is doubtful whether an increase of exports to European countries would make up the difference. The solution of this more or less troublesome question may well lie in further agrarian developments of China itself.

Ewing Galloway

SOY BEAN CAKES ALONG A CHINESE WATERFRONT

Perhaps the greatest economic and industrial triumph of the soy bean occurred, oddly enough, in Denmark. Until some thirty years ago this pleasant country was more than self-supporting in the production of cereals, especially wheat. But U. S. mass production and low prices made for perilous and in some cases disastrous competition, even in Denmark's home markets. The Danes bethought themselves of raising live stock, imported the soy bean (using the oil for its usual purposes), and used it as feed for their live stock and poultry. Today 70 per cent of Denmark's export trade consists of live stock and animal products: milk, butter, cheese, bacon, ham, eggs, and the like. And for their country's regained economic health Danes give thanks to the soy bean.

The bean came into the United States in 1804 and remained there for almost a century in the complete obscurity of being a curiosity interesting only to botanists. Then state agricultural experiment stations turned their attention to it, principally with the idea of finding in it a suitable feed for live stock. Farmers began crossing one bean with another and a typical phenomenon of Americanization occurred: the soy bean, which usually suggested rice bowls, mandarins, dusty dynasties, or chop suey, began to be known by such names as Lexington, Hoosier, Southern Prolific, Wisconsin Black, Roosevelt, Wilson. The bean was naturalized.

In the United States the paramount importance of soy bean is still its agricultural use. But it is significant that 75 per cent of the soy bean oil consumed in United States is being used by paint and varnish industries and in manufacture of linoleum, oil cloth, artificial leather. Lesser quantities are utilized in printer's ink, liquid soaps. Few soy beans are imported into the country.

Thus in brief the soy bean of Manchuria is now as much the soy bean of America. In the United States some 8,688,000 bushels of beans are grown annually, mostly in the Central Southern States, the harvest roughly estimated at $70,000,000. And persistently the Department of Agriculture urges the growth of more. Its curiosity we recapitulate. As bean it is food, but unlike bean it may also be milk or cheese or fertilizer. And because of its oil it is industrial, and you can light lamps with it or use it as axle grease. It is odd but possible that you may consider a glue factory, a factory of artificial leather, a glass of milk, Worcestershire Sauce, and a handful of fertilizer . . . that you may consider them and discover that their least common denominator, their irreducible minimum is—we have presented it herewith—the soy bean.

Ewing Galloway

FOR EXPORT TO JAPAN, BAGS OF SOY BEANS AT DAIREN, MANCHURIA

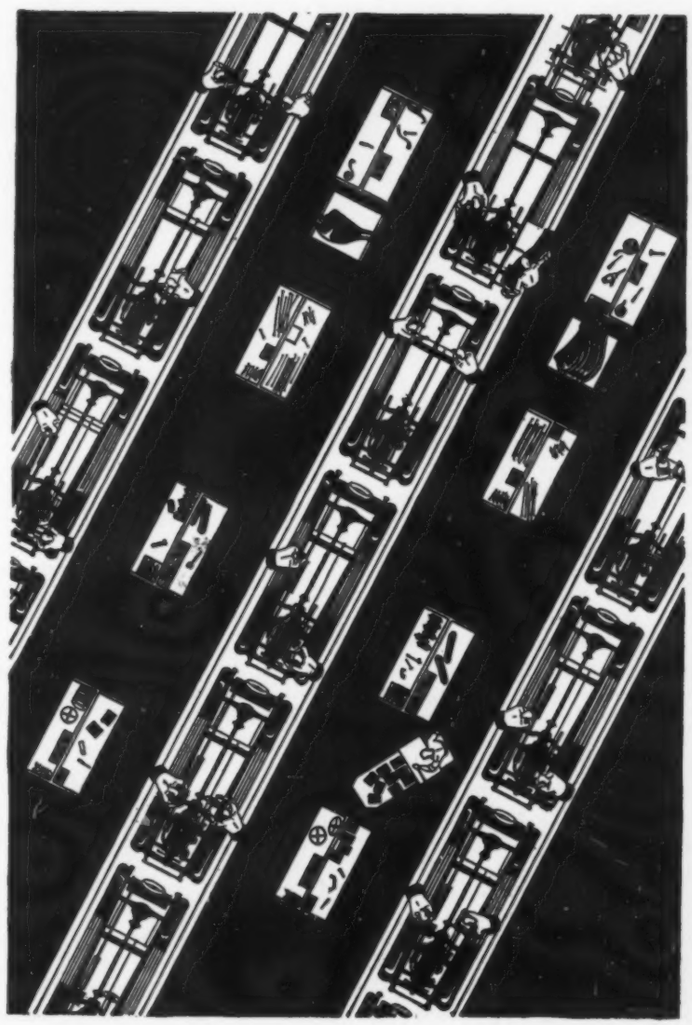
SIMPLE AXIOM
becomes a serious business factor

IN class-rooms the world over, youth has learned that a straight line is the shortest distance between two points. Executives too, wracking their brains to find the most effective method of producing goods in quantity at low cost, have found that the simple axiom is also a serious business factor.

From the early experimental days when straight line production was beginning to prove its practical value to industrial executives, The Austin Company, international engineers and builders, recognized the true possibilities of this modern method of operation. Many manufacturers, too, saw its unquestionable advantages . . . some even scrapping obsolete plants to occupy new plants designed and constructed by Austin for economical production. Today, with keen competition forcing the issue, every branch of industry is adopting straight line production methods . . . and it has been Austin's privilege to design and build scores of new plant projects that will give these manufacturers a better foot-hold in the battle for business.

In the automobile industry, where even the spotting of a rivet or the driving of a screw is now a straight line operation . . . in foundries, machine shops, iron and steel mills . . . in food, ceramic and glass plants . . . in laundries and aircraft factories . . . wherever there has been need for more speedy, economical production, *there Austin has introduced straight line operation.*

Men who look ahead . . . executives who demand that their new plants and warehouses be planned and built with an eye to the future . . . will appreciate Austin service. Many will call Austin for sound counsel and prompt action . . . for the design and construction of projects of every size, everywhere.



THE AUSTIN COMPANY

The AUSTIN METHOD *of Undivided Responsibility*

Design, construction and building equipment . . . separate responsibilities ordinarily . . . become one unified responsibility under The Austin Method. One nation-wide organization handles the complete project under one contract which specifically guarantees in advance, total cost, time of completion with bonus and penalty clause if desired; and quality of materials and workmanship.

THE AUSTIN METHOD

ENGINEERS AND BUILDERS . . . CLEVELAND

Clash of Steel

[*Continued from page 69*]

closely allied with Mr. Eaton in the Cliffs Corporation, was not yet in opposition. Mr. Campbell talked with some of his large stockholders in Youngstown itself, notably with Richard Garlick and with John Tod, whose holding of 40,000 shares was second only to the Eaton block. Both men were directors; both supported the merger project. Another director, seventy-two-year-old John L. Severance, was telephoned in Pasadena and was enlisted. Mr. Harris Creech, director, president of the Cleveland Trust Co., was not telephoned.

March 7.—This series of conferences and plans for a directors' meeting to be called the following Monday occupied Mr. Dalton and Mr. Campbell until Mr. Eaton returned. On Friday, March seventh, Mr. Dalton telephoned, made an appointment to meet Mr. Eaton in the offices of the Cleveland-Cliffs Iron Co. (The Cliffs Corporation is the holding company.) There, at 3 o'clock, gathered Mr. Dalton, Mr. Eaton, and the three Mathers. And there the war began.

. . .

Mr. Eaton testified that he had not been warned of what Mr. Dalton was to tell him. Although Sheet & Tube stock, since January, had been steadily rising on the Stock Exchange, he had not found that fact challenging. At a considerable disadvantage, then, he marshaled his most powerful arguments on the spur of an exceedingly sudden occasion. He at once attacked the one and one-third for one basis, pointing out that while Sheet & Tube was selling for $148, Bethlehem was at $101, and one and one-third shares of Bethlehem amounted to about $135, an immediate loss to Sheet & Tube stockholders of $13 a share. (This was not quite true; Sheet & Tube's high on the seventh was $142.) He recalled the 800,000 Bethlehem shares still in the hands of the underwriters and asked whether their distribution to the public would not further depress the stock's market. Mr. Dalton replied that current market quotations had no bearing on the fundamental economics of the deal. Shifting his tactics, Mr. Eaton then fired the opening gun of his major offensive: Ohio for Ohioans. In the following month, this offensive was brilliantly executed and attained tremendous proportions. Mr. Eaton himself could scarcely have realized what he was to do with it. He passed from this to the dangers lying in a rearrangement of the steel map, to the part Pickands, Mather might have played in arranging the deal. Finally he asked for time to consider. Mr. Dalton opposed a postponement of the directors' meeting set for Monday, and the conference ended. From his own office, however, Mr. Dalton telephoned both Mr. Campbell and Mr. Grace and informed them of the ill success of the meeting. It was then agreed that the directors' meeting should be put over to Wednesday and that all the principals in the matter should go to Cleveland on Tuesday to confer again with Mr. Eaton.

March 11.—This "Tuesday Conference" was one of the most curious in industrial history. Circling the large Pickands, Mather office in the block-big Union Trust Co. Building were all the protagonists of the war. The three Mathers were there; Mr. Grace and his comptroller, Mr. Schick; Mr. May and Mr. Campbell of Price, Waterhouse; Mr. Campbell and Mr. Purnell of Sheet & Tube, together with Directors Tod and Garlick; Mr. Eaton and his New York Otis-partner Ferdinand Eberstadt; Mr. Dalton. These men were assembled to tell the largest stockholder in the Youngstown Sheet & Tube Co. about the plan to sell that company to another and to persuade the stockholder that the plan was a good one. Neither purpose had the slightest chance of being realized. By the time Mr. Eaton entered the Union Trust Co. Building, he had completely made up his mind to fight the merger, and he had mapped the campaign. Only the day before, President E. T. McCleary had spread across the Youngstown papers the promise that the new Republic Steel Corp. would keep its headquarters in Youngstown, although Republic's Chairman T. M. Girdler was even then preparing a house in Cleveland. The Youngstown *Vindicator* had printed a front-page editorial attacking the Bethlehem deal, demanding if it were to be "Youngstown, leader in the steel industry of America, or Youngstown, another pay roll town?" The lines were drawn, and Mr. Eaton had drawn them. In a speech which occupied an hour (from 11:30 to 12:30), he recounted the Grace conversation of November fifth, declared that Mr. Samuel Mather had outlined the same steel philosophy more than a year before, in Pasadena, and asked what had happened to change their minds. Mr. Mather called attention to Mr. May, who patiently sat with a sheaf of papers a half-inch thick. But Mr. Eaton had not come to discuss figures. He had come to state a position. Thus the figures remained with Mr. May, and two partners of Price, Waterhouse for the first time in their lives found themselves and their work ignored. Throughout the day they sat idle, as did Bethlehem's Comptroller Schick. When they left, they took the papers with them, and Mr. Eaton was never to see them again.

Both Mr. Grace and Mr. Campbell rose to answer Mr. Eaton. In a subtle way they were at a disadvantage. Mr. Grace is a cold clear thinker, a lover of precision. Mr. Campbell is a steelman and a crude, direct fighter. But Mr. Eaton was fighting on another front, a front of large, resounding phrases and broad considerations. This is not necessarily to condemn the phrases or the ideas behind them, but it helps explain the dramatic futility of the famous meeting of March eleventh.

In the afternoon, Mr. Eaton resumed the attack along several fronts. He cited Bethlehem's irregularity of dividend payments and then boldly launched into the question of Bethlehem salaries, asked if Mr. Grace's salary, plus bonus, did not average over $1,000,000 a year, if some Bethlehem vice presidents drew $300,000 or more. Mr. Campbell said he thought Mr. Grace might have taken out $1,000,000 in some given year, but doubted if such a salary were average. From Mr. Purnell, Mr. Eaton demanded the costs per ton of Bethlehem's finished products. The figures were not available. In the meantime, Mr. William G. Mather, speaking for the Cliffs Corporation, had asked for a week's delay before the directors' meeting. "Anything else would be very unbusinesslike and improper." Mr. Eaton declared that if the Board accepted the plan on the following day, he would be left with no alternative but to oppose the merger. Mr. Campbell promised to advise him if the board were willing to postpone the decision. Mr. Eaton asked if Mr. Campbell would call off the plan if it could be shown that he (Mr. Eaton) controlled enough stock (more than one-third) to block the merger. Here Mr. Campbell spoke finely: "No, sir, I will not. I owe it

[*Continued on page 108*]

The

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to my stockholders to give them the opportunity to approve this merger. I believe they will stand by me." This was at seven o'clock, the close of the "Tuesday Conference."

March 12.—By two o'clock on Wednesday, when the directors met, it was apparent to everyone that neither a week nor a year would change Mr. Eaton's mind and that an extension of time would do nothing except strengthen the opposition. Accordingly, Mr. Campbell kept his promise and telephoned Mr. Eaton that the deal had been approved. The stockholders' meeting was set for April eighth. That night he issued a long statement, reviewing the position of Sheet & Tube and praising Bethlehem. It was the beginning of the longest series of public utterances he had ever been called upon to make. Instead of bringing peace, his December visit to Grace at the Hotel Plaza had plunged him into turmoil.

March 14–25.—On Friday, March fourteenth, Mr. Eaton betook himself to Youngstown to name his proxy committee. Julius Kahn, president of the Truscon Steel Co., was to head it; others were Chairman W. H. Foster of the General Fireproofing Company and Hugh B. Wick, a member of Wick & Co. and a nephew of that Wick who had been Sheet & Tube's first president. Another Wick—smart, sauve Myron C. Jr.—was the committee's secretary. During the next three weeks this committee did almost everything except collect proxies. It asked fourteen leading questions, received Mr. Purnell's answer, answered the answer, and heard Mr. Purnell dryly remark that "there will be no answer to the answer to the answer." It lost its chairman, who naïvely wrote that he had not expected the position to involve taking sides in the argument, and found another in Philip Schaff. Then Sheet & Tube tersely announced that neither Mr. Foster nor Mr. Schaff was a common stockholder when the merger was announced. It conducted a spirited debate with Mr. Campbell on the subject of Mr. May's once-neglected book. Above all, this distinguished committee sponsored one of the most brilliant publicity campaigns on record, stirring all Ohio into a frenzy of local pride, keeping this steel merger on the front pages of the newspapers for six weeks and, publicizing Youngstown as no town had been publicized since Shelby, Montana, or Dayton, Tennessee.

It was, in fact, extremely difficult to discover and cling to facts in the torrent of emotion which the campaign aroused. The excitement was of two kinds. In Youngstown literally everybody was excited. In Cleveland, although there was plenty in the newspapers, excitement became acutely personal in the upper ranks of society. Within a few weeks not only Cleveland's leading men, but also their wives, sweethearts, and daughters were to have discussed the subject so exhaustively that any mention of it was to become almost nauseating. Throughout this period the exact progression of events was less important then the emotion generated. There was, for one thing, a vigorous quarrel about accountants, in which Price, Waterhouse rejected the demands of Ernst & Ernst, the Eaton accountants. "You will find," grunted Mr. Campbell with two-edged wisdom, "there is a good deal of difficulty in getting the figures from any public accountant." At any rate Mr. Eaton did not get the Price, Waterhouse figures, and this later became the basis for one of many law suits.

Without these reports, however, the anti-merger forces conducted a campaign against the deal's justice. A series of dramatic attacks ran in five advertisements in the Ohio papers, headed "YOU SHOULD KNOW THE FACTS." The tenor of these attacks, graphically illustrated, was that over a period of years (usually five years) Sheet & Tube had maintained an earning record considerably more impressive than that of Bethlehem. In counter-attack, the Bethlehem-Youngstown forces emphasized the future, rather than the past. They reprinted two of the anti-merger advertisements in full, together with answers to them under the clever heading, "YOU SHOULD INDEED KNOW THE FACTS." Over the anti-merger advertisement they put the headline: "HALF THE FACTS"; over their answer they put: "THE OTHER HALF." One of their best points was the rate of increase of net earnings, which they showed as follows:

	Bethlehem	Sheet & Tube
1925	$10,172,541	$12,331,180
1929	35,779,638	23,200,000
	25,607,097 (250 per cent)	10,868,820 (88 per cent)

The answers to the proxy committee's charges were summed up in a full page advertisement printed throughout the country, signed by three accounting firms (Haskins & Sells; Lybrand, Ross Bros. & Montgomery; Arthur Anderson & Co.), analyzing the deal and stating flatly: "We are convinced that the terms of the proposed merger are fair and favorable to Sheet & Tube."

Truck drivers in Youngstown and great ladies in Cleveland glanced over these arguments and continued the argument in their own way. Some few years ago, a section of a Youngstown lung was put under a microscope and revealed a heavy coating of powdered steel, so intimately has the industry taken possession of the community. Most important Ohio papers (in Cleveland, the *Plain Dealer;* in Akron, the *Beacon Journal;* in Columbus, the *Ohio State Journal;* in Cincinnati, the *Enquirer;* in Youngstown, the *Vindicator*; the Scripps-owned *Telegram* was neutral) were ranked with Mr. Eaton and became lyric in their devotion to the Mahoning River Valley cause. The lobbies of the Hotel Ohio in Youngstown were stormy with debate; there were Ivy Lee and a corps of young men who circulated through the city testing sentiment; Mr. Eaton took half the suite of Proprietor Mark Hannan. Day by day he received the groups of citizens, the councilmen who condemned the merger by a vote of five to one. At the Sheet & Tube plant, Mr. Campbell met and persuaded his men into a unanimous vote in his support. In this time also, he was busy telephoning his stockholders. John Severance in California asked, "What can I do?" and joyfully motored 200 miles to get the proxy of a stockholder with 180 shares.

Nowhere in the battle did any single figure show to more advantage than did Mr. Campbell during these days. Family was ranged against family; every Youngstown proxy was delivered under strain. Mr. Campbell never threatened and never used his enormous personal prestige to compel a vote which would cause trouble to the stockholder. In his later testimony he even declared that he had no knowledge of the stock buying which the pro-merger forces undoubtedly were doing at this time. Sheet & Tube stock rose to 150 on the Stock Exchange; in private deals it was reported as reaching 171. The Eaton men later were to make this private buying the basis of various legal objections to the deal.

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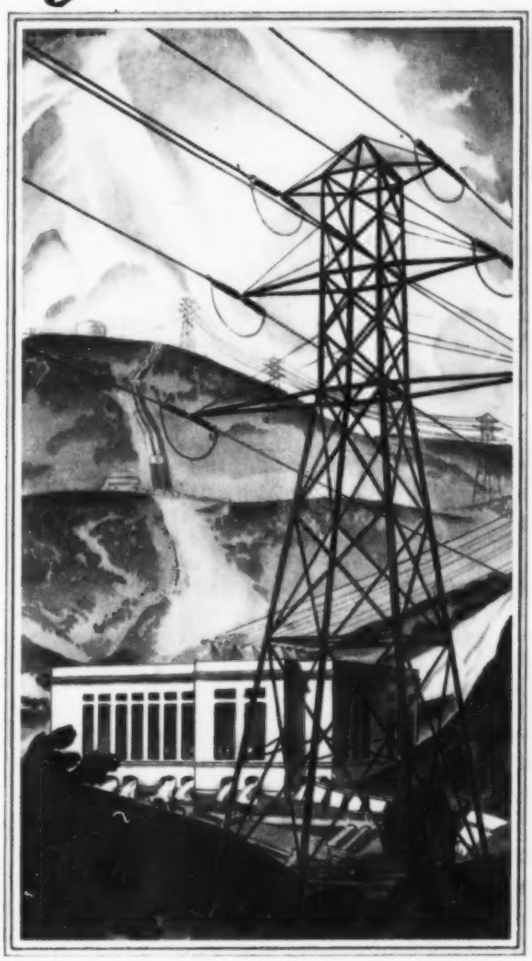
The Flow of Power

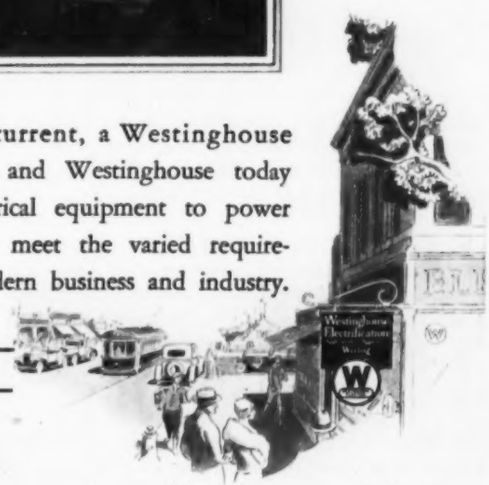
speeds the flow of Production



Modern business is tuned to the rhythmical hum of the high-tension power line. Its insistent commands have broken down ancient geographical barriers as old as the first rude paddle-wheel mill. Where once we laboriously carried raw materials to the source of power we now flash power with effortless ease to the logical seat of our production activities—however remote it may be. There we put it to work driving machines, lifting burdens, bringing light, fresh air, heat and comfort—speeding production by making work easier and more pleasant, performing tasks which would be impossible under old methods.

Electric power transmission is based on alternating current, a Westinghouse development, and Westinghouse today supplies electrical equipment to power companies to meet the varied requirements of modern business and industry.

Tune in the Westinghouse Salute over WJZ and the coast-to-coast network, every Tuesday at 10 P. M., Eastern Standard Time.



ELECTRIC POWER BUILDS BUYING POWER

Westinghouse

Clash of Steel

March 26.—On the twenty-sixth, the luxurious private car *Bethlehem* rolled into the Youngstown yards, and Messrs. Schwab and Grace received *editors*, not *reporters* aboard the car. Before lunch they went to the Sheet & Tube offices, permitting themselves to be photographed on either side of Mr. Campbell, his arms being firmly held by their hands. So dour was the appearance of Mr. Campbell that many an anti-merger zealot pasted the photograph on office walls with the caption popularized by a local newspaperman: "Two city slickers and the country boob." At the luncheon itself were enacted some highly dramatic scenes. Mr. Schwab, who is easily the most sentimental of great industrialists, allowed himself free rein in emotionalizing the deal. After opening with some facetious remarks about his willingness to help out Mr. Grace in a difficult sale, he launched into a eulogy of Mr. Campbell. As a climax, more theatrical than logical, he called upon Youngstown to "follow Jim Campbell, right or wrong!" Mr. Grace spoke in his usual precise and factual vein. When it came Mr. Campbell's turn to speak it was apparent how intense had been the strain upon his mind. His voice was choked; tears streamed down his cheeks. He again told of his long distrust of Bethlehem and the struggle he had been through before he could bring himself to favor the sale.

March 27.—Mr. Eaton did not attend the meeting. As the private car *Bethlehem* reached Youngstown, Mr. Eaton drove off to Cleveland in his roadster, thereby confounding those prophets who had expected a general meeting, reconciliation, and compromise. On the next day he returned and spoke to a similar meeting, larger in numbers because of local curiosity and because invitations had been more generally extended. His words added nothing new to the case he had already established and publicized. It was universally agreed in Youngstown that these two luncheons, widely advertised, had changed not a single vote, had indeed emphasized the futility of any general conferences on the subject. The fact was that very few proxies changed hands once they had been given, a situation closely paralleling that of the Rockefeller-Stewart proxy fight. While both the Guaranty Trust and the National City Bank of New York put additional proxy armies at the disposal of Youngstown and while Otis & Co., through their salesmen, undertook a complete canvassing campaign, the results were small. Mr. Eaton had in fact mustered the bulk of his strength before he started; Mr. Campbell's following was of a character which was difficult to influence.

Thus Youngstown waited for the eighth of April. At no time did the excitement abate. During the month, Chief Justice Taft died, the ninth planet was discovered, and a woman named Irene Schroeder was convicted of the murder of a traffic policeman. None of these events impressed itself upon the Mahoning River Valley mind.

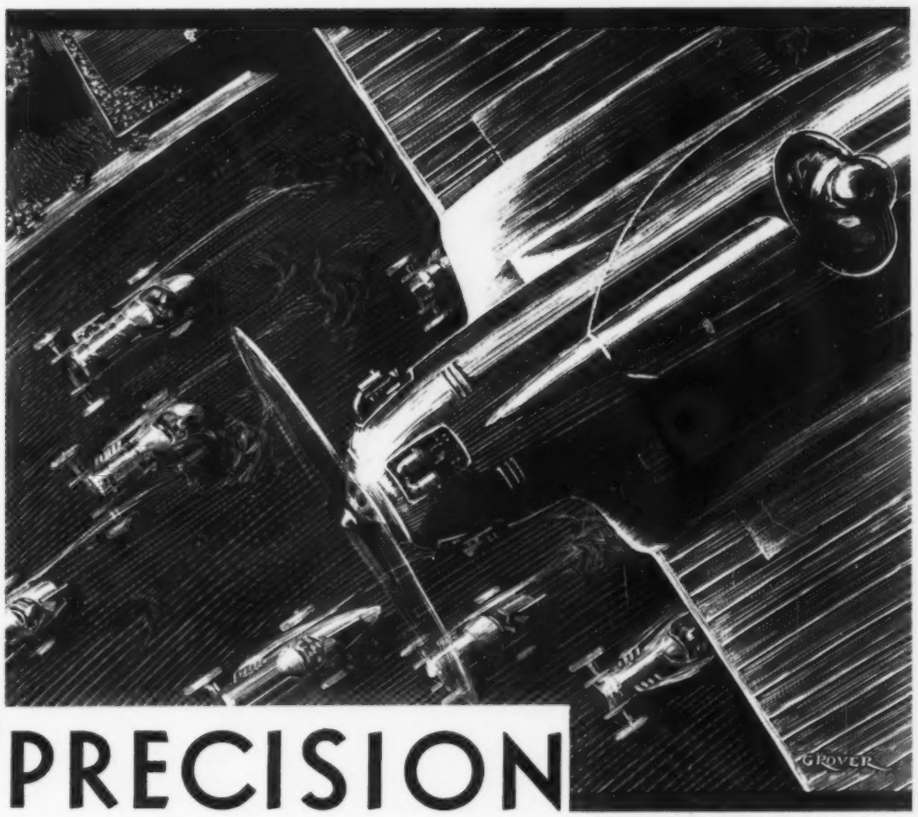
* * *

April 2–7.—After Wednesday, April second, the entire case took on a new complexion. As its first period (roughly, from December to March) had been one of negotiation, and its second period (the month of March) had been one of violent emotions, so the third and final era of the deal could be characterized as the Era of the Law. For this, Mr. Eaton was entirely responsible, as he in substance admitted in court. While neither side could be certain of the result of the proxy battle, it became apparent by the first week of April that the anti-merger forces were making slight headway and that the Sheet & Tube committee probably held enough proxies to vote the merger. And, as the struggle had been both long and hard-fought, there remained many loose ends which smart lawyers could weave into a suit.

Petitions for injunctions multiplied day after day, and at one time Sheet & Tube was faced, simultaneously, with four separate suits. One of the most important of these was filed in Cleveland, on the fifth, and sought to restrain the very holding of the stockholders' meeting. The sixth was a Sunday, and on that day it was discovered that the three federal judges in Cleveland were all stockholders in either Bethlehem or Sheet & Tube and therefore could not properly sit. Judge Arthur J. Dennison, Presiding Justice in the Sixth District, thereupon named Judge Arthur J. Tuttle to hear the case on Monday, one day before the meeting was scheduled to begin. The hearing was held in the Cleveland Federal Building and into the small, foul-smelling office of the clerk of the court filed Mr. Campbell, Mr. Purnell, Mr. Eaton, and no less than ten attorneys, headed by Mr. Newton D. Baker, Cleveland's most distinguished resident. Mr. Baker had been retained by the pro-merger army—he himself said "for window dressing." The hearing produced only one laugh, when Judge Tuttle at the opening asked, "Just what connection has Mr. Eaton with this case?" Attorney Clan Crawford opened the attack by declaring, "Sheet & Tube directors did not have as much information in selling their company as an ordinary man would have in buying a house." Mr. Eaton gave his long and revealing testimony, ending with the listing of the securities companies he and his firm had organized. Mr. Hassell Tippitt of Ernst & Ernst told of the rebuffs his firm had suffered at the hands of Price, Waterhouse. The session lasted into the late evening, with no recess for supper, before Judge Tuttle denied the injunction. "The amount of information offered by Bethlehem is that company's business. Dissatisfied stockholders should vote against the merger, not resort to the courts." Mr. Campbell and Mr. Purnell shook hands with Mr. Eaton, trudged to the Erie station under the shadow of the Van Sweringens' gleaming tower, ate a plate of ham and eggs.

April 8–10.—This was the most significant legal skirmish before the meeting on the eighth, and the Eaton forces lost it. A far more critical situation arose in the final moments of the first day's meeting. After one o'clock on the afternoon of March twenty-second, when the stockholders' lists were closed for voting on the deal, Mr. Eaton and his interests bought 51,038 shares of Sheet & Tube stock. They knew well that they could not vote it; the proxies had probably been given to the pro-merger committee. It is possible that when they bought it, they were not quite sure what they were going to do with it. But on the morning of the eighth, while the stockholders were gathering, they used it as the basis of a new suit. They filed the suit in Common Pleas Court, and as seven of the eight Common Pleas judges in Youngstown were busy, they presented it to one C. S. Turnbaugh. This jurist came from Cambridge, Ohio, had some reputation as a student, was a thick-set, genial man with a fondness for cribbage. To him, the Eaton attorneys presented their brief. While Otis & Co. could not vote the stock, they argued, neither should the Sheet & Tube committee. Was it not unjust for stock now owned by Otis & Co. to be voted for a proposal Otis & Co. opposed?

[*Continued on page 112*]



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The voting began at eleven Tuesday night. Objection after objection rose from the Eaton lawyers and was neatly referred by Mr. Purnell to the Inspectors of Election. At 11:14 Mr. Luther Day (Day & Day, Cleveland) leaped to his feet and asked if Sheet & Tube proposed to vote the 51,038 shares. Mr. Baker answered: "I see no reason why not." Mr. Day in great agitation declared he would go at once to Judge Turnbaugh, and with him departed the corps of lawyers, the corps of newspapermen. As it was 11:30 by the time the army arrived at the Hotel Ohio, the good judge was sound asleep. Attorney Smith reached him first, and in some confusion the judge sent him for the county clerk and the journal, promising he would grant the injunction. By twos and threes the lawyers and reporters crowded in the room, forming an excited circle about a jurist *en déshabille*. Gradually, order was restored, and on the promise by Mr. Baker that the disputed shares would be *voted*, but not *counted*, Judge Turnbaugh put off his decision until morning. At 11:30 on Wednesday morning he denied the Otis & Co. injunction, declaring the owners of the stock, having bought it with the knowledge of its divorce from voting power, were not the proper persons to bring the suit. But at three o'clock he did grant an injunction which differed only in that the petitioner was a stockholder of record. Sheet & Tube promptly petitioned to dissolve the injunction, which had been amplified by Judge Turnbaugh to include all stock transferred since March twenty-second, a total of about 91,000 shares.

Throughout the week the stockholders, who theoretically had met to decide upon the merger, were in fact powerless. The real battleground was not the big Stambaugh auditorium where they met and adjourned, and then met again and again adjourned. Mr. Eaton had thrown their vast project into the courtrooms of the county building, and it did not leave there until two o'clock on Friday afternoon.

April 11.—Then Judge Turnbaugh dissolved the temporary injunction, noting that "it is understood by both sides that disposition of this case will not in any way interfere with future suits for injunctions." His associate, Judge Lyon, explained: "Judge Turnbaugh does not want to keep the city in continuous turmoil." And at three o'clock the stockholders for the seventh time entered the Stambaugh auditorium. This was to be their strangest session. At five o'clock, when the Election Inspectors were about to announce the vote, a personable young reporter by the name of Leslie Gould was dragged from the booth where he was telephoning his story to New York. He entered the auditorium, angry, and told of his treatment from the stage. Local telephones for the press had been installed in the men's dressing room, and they were now found to be disconnected. Several tried to leave the building, only to discover the doors locked and guarded by Sheet & Tube safety police. Then an Eaton lieutenant went to the doors, tried them, and returned to the stage. He walked to the Sheet & Tube table: "Mr. Campbell, what crime have I committed to be kept a prisoner in this building?" The Sheet & Tube executives jumped to their feet, Mr. Campbell and Mr. Purnell exclaiming: "You are not a prisoner." Mr. Campbell offered to go to the doors himself, but it was Mr. Baker who finally went and had them opened. All disclaimed responsibility for the order which had gone out to Sheet & Tube's Safety Director Woltz; later it appeared that one of the lawyers, fearing another injunction, had given the order on his own responsibility.

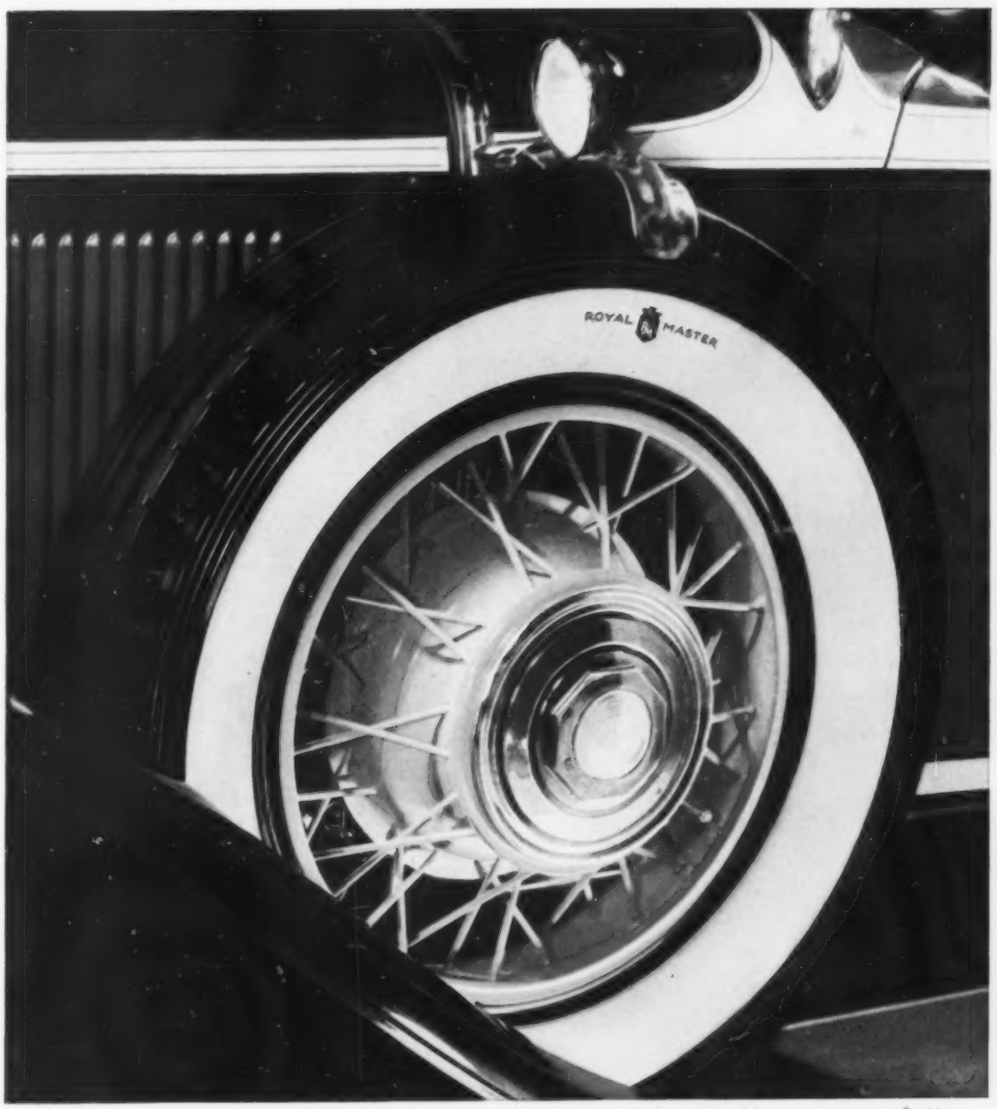
When the room again became calm, the inspectors announced the merger victory. Mr. Campbell had secured 857,821 votes, nearly 60,000 more than were required.

• • •

Mr. Campbell's personal triumph was no less complete because it was achieved under the shadow of the Law. Whatever future obstacles Mr. Eaton might put in the way of the deal's final consummation, the hard-fighting old man had won a notable battle. He had held the support and loyalty of his company in the face of exceedingly able opposition. He had thrown a monkey wrench into the gears of Mr. Eaton's plans.

Just what these plans had been and with how bitter a mind Mr. Eaton slipped away from Youngstown on the night of the eleventh are questions which no one but Mr. Eaton can presume to answer. He and his companies had been taking a large position in the industry; unquestionably he looked toward fresh consolidations with the Ohio companies as the nuclei of larger units. Since the opening of the battle, he has on several occasions emphatically denied any desire to add Sheet & Tube to the Republic combination, and while Republic's President McCleary *did* make another trip to Youngstown in March to urge such a step on his old friend Mr. Campbell, this may well have been his own idea, unauthorized by Mr. Eaton. In any event, it was no part of Mr. Eaton's plans to see Sheet & Tube, the industry's fourth largest unit, joined with Bethlehem, already a good second to great U. S. Steel. By his battle, Mr. Eaton may have saved this particular situation. But he has made some enemies and put potential enemies on their guard. Whatever may be the issue of the new suits filed in Youngstown to block the merger, the war has not contributed to the ultimate success of Mr. Eaton's ambitions.

Nor, in all probability, has it left any deep cut across the steel industry. The Youngstown plant, with its total ingot capacity of over 3,000,000 tons annually, will continue to pour forth steel sheets and pipe, whether it be for Wall Street or for Otis & Co., for the scattered stockholders of Bethlehem or the old families of the Mahoning River Valley. With it will be combined another producer, to round out its list of products, to add the rails and structural shapes for which it has no capacity. If this producer is not Bethlehem, then it will be Inland. Conceivably, and if Mr. Grace's ambitions lie that way, it may be both Bethlehem and Inland, to create a company more nearly able to challenge U. S. Steel. Mr. Eaton and his allies have seen this as a potential danger, forecasting price wars between the industry's leader and the runner-up. Few outside observers share this alarm. It is in fact difficult for changes in the industry's control to greatly change the industry's fundamental geography. Iron ore, exhausted in the Ohio valleys, is still abundant in Minnesota; freighters still transport the ore across the Lakes. Mills not too far from the source of supply still process the ore, transmuting it into forms the world needs. The great consuming markets still lie in the East and Middle West. Neither Mr. Eaton nor Mr. Campbell nor Mr. Grace can largely alter these fundamentals. Mr. Eaton quoted Mr. Dalton as saying of the middle-western companies: "They all go to New York, sooner or later." But it will be a long time before a Youngstown puddler loses his job because steel sheets are rolling out of a mill in lower Manhattan.



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U N I T E D S T A T E S US R U B B E R C O M P A N Y

XUM

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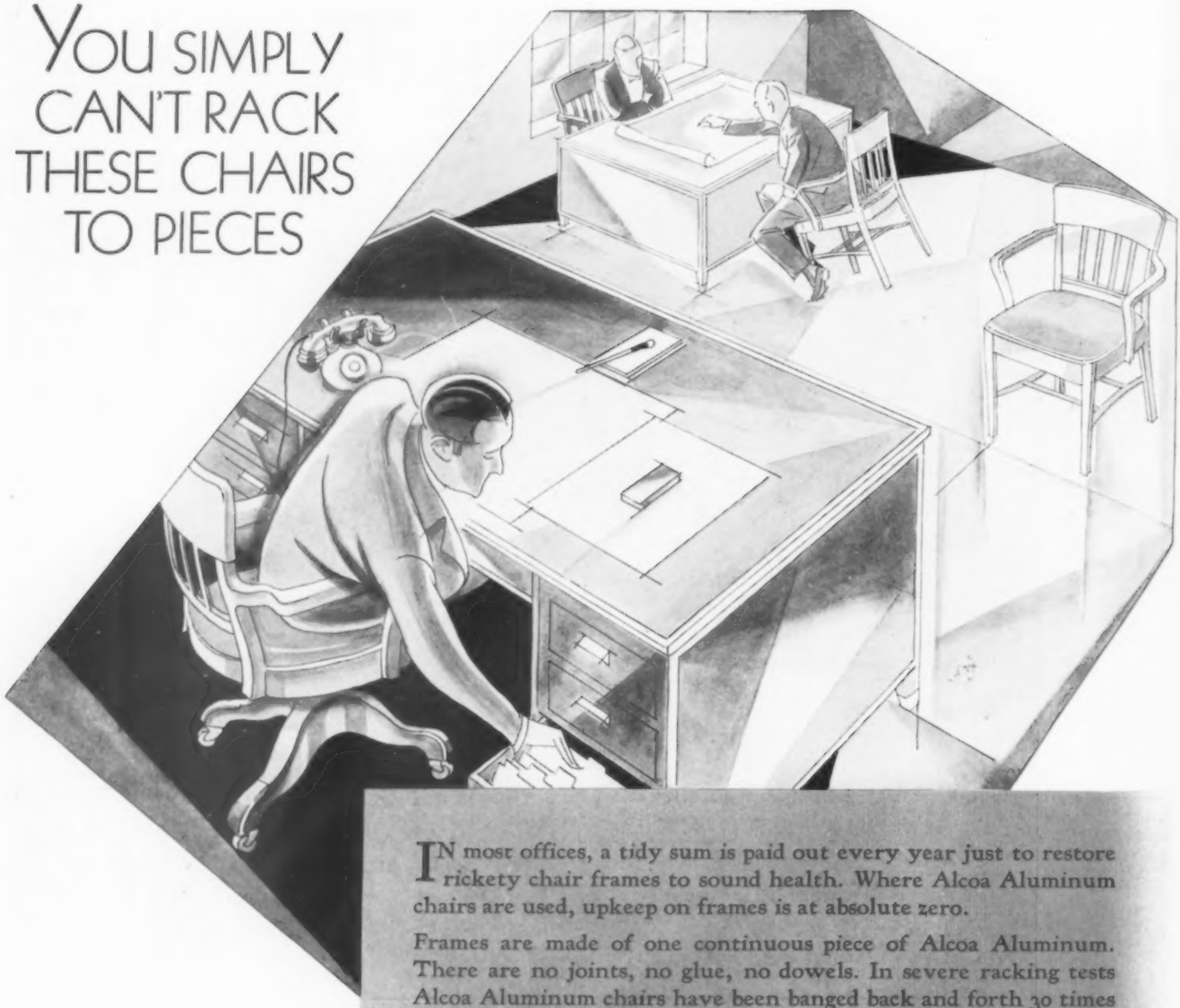

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Frames are made of one continuous piece of Alcoa Aluminum. There are no joints, no glue, no dowels. In severe racking tests Alcoa Aluminum chairs have been banged back and forth 30 times a minute for 150 hours with no sign of wear. Given this same test, glued chairs broke down in a very few hours.

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Many styles and types of executive, clerical, stenographic, hospital and hotel chairs are available. May we send you a free copy of a special booklet, "Distinctive Chairs of Aluminum"? ALUMINUM COMPANY *of* AMERICA; 2402 Oliver Building, PITTSBURGH, PENNSYLVANIA.

ALCOA

ALUMINUM

CHAIRS OF ALCOA ALUMINUM

Among Those Fighting in Latest Steel War

P. & A.

MR. EATON

P. & A.

MR. SCHWAB, MR. CAMPBELL, MR. GRACE

MR. PURNELL

International

AT THE STOCKHOLDERS' MEETING. IN THE FOREGROUND ARE MR. TOD AND MR. GARLICK

MR. W. G. MATHER

Keystone

MR. BAKER

MR. SEVERANCE

MR. DALTON

XUM

ESTABLISHED 1818.

Brooks Brothers,

CLOTHING,

Gentlemen's Furnishing Goods,

MADISON AVENUE COR. FORTY-FOURTH STREET
NEW YORK

© BROOKS BROTHERS

Clothes for the Horseman

Complete and Correct Equipment for Polo, etc.

Send for "A Wardrobe for
RIDING & POLO

BRANCH STORES
BOSTON
NEWBURY CORNER OF BERKELEY STREET
NEWPORT PALM BEACH

Rufus Lenoir Patterson's Cigar Machine

[*Continued from page 58*]

One curious distinction is worth noting. Whereas cigarette machines are sold outright to cigarette manufacturers, the cigar machines are merely leased. At $1.00 per thousand cigars royalty in addition to cost and upkeep of the machine. (This in actual practice yields about $620 per machine, indicating that not many of the machines are producing at their capacity of 1,000,000 per year.)

This royalty is no pain to the manufacturer. It is not possible to make cigars by hand at less than $8.00 per thousand. In some cases wages run to $22 per thousand. Let us assume that $12 is an average. The machine even in relatively small quantities can produce for $6.00 per thousand (including the royalty), and the user is therefore a boor if he grumbles at yielding $1.00 to the Machine's god.

Applying the most sophomoric economics to this Patterson creation, we find such characteristics of the machine age as the following quickly projecting themselves:

1. Hand labor is beaten. Hence the household or small concern of any sort quits. Already down from 22,000 to about 6,000, it is conceivable that within a decade there may be only a few hundred cigar manufacturers. More importantly, nearly all the cigars that are made will be made by a very few concerns. Four or five concerns make 95 per cent of all our cigarettes.

2. The cheapest product develops the biggest market. Only ten years ago the five-cent cigar accounted for considerably *less than a third* of all U. S. made cigars. Now the five-cent cigar is well over the 50 per cent mark and is the only class of cigar showing rapid gains. In another decade it may be as unusual to pay ten cents for a cigar as it is to buy made-to-order shoes—the prerogative of the rich and fussy.

3. Advertising is the inevitable Pythias to the Damon of the Machine, the Jonathan to its David, the Leander to its Hero, the Mutt to its Jeff. Why the cigarette? The War and other incidentals played a part. But mainly it was the machine—and advertising. Compared with the cigarette, the cigar has never been advertised. Few cigars have had a national reputation. A Blackstone was loved in New England, unheard of in Des Moines. In the face of this situation, even the biggest manufacturer lacked faith to risk millions in advertising in order to obtain national sale. And, dependent on hand labor, he could never be sure that something (such a machine or such a union) might not undo him. Now not only George Washington Hill but other manufacturers have leaped into partnership with advertising so that presently there will be a cigar as famous as a Camel. And (Who dare deny it?) the partnership beginning by selling the male on the cigar's masculinity may end by selling the female its femininity. Was it not mere prejudice which kept most Carmens from smoking the stogies they made?

Profounder economics of the machine need not trouble us here. But consider finally the Pride of the Machine, for a machine is invested no less than the clipper ship with the pride of its skipper. Long years ago, a Mr. Owens invented a way to blow glass by machinery. But the glass-blower, although he became scarcer, was certain he would never be extinguished, for no machine could master the finer subtleties of his art. Challenged, the manufacturer never rested until, just before he died, the plans were completed for a glass-machine factory—in Venice.

Like glass to Venice are cigars to Cuba, whence issue the very best. And of these the most famous, if not the most expensive, is the Corona Corona. Mr. Patterson's machine already makes some three hundred different shapes and sizes of cigars (of course, one effect of the machine will ultimately be to reduce the different types of cigars from thousands to dozens; so now is the time for all good cigar-band collectors to complete their quests). But the difficulty is not only in the superfinenesses of its fittings, but also in a very small queer hump which appears on its mouthward end. There is no reason for it, but it *is* Corona Corona. Furthermore, all the Corona Coronas in the world could be made on a dozen machines, so that Mr. Patterson's revenue would be trifling. Nevertheless, you guess the answer. Even if it takes hundreds of thousands to make a Corona Corona machine, the comic spirit will not rest until this cigar's snobbery has succumbed to its wit. This is to predict that the Corona Corona machine will be perfected. And to refer the reader to page 148, where is printed *A Note on the Cuban Revolution.*

"Advertising" . . . says FRANCIS H. SISSON

"is perhaps the Greatest Agency of Natural Selection in the Business World" . . .

FRANCIS H. SISSON
Vice President of the Guaranty Trust Company of New York

"It accelerates the process whereby the world's productive activity is becoming centralized in the hands of those who are best equipped to carry it on."

IN this statement Mr. Sisson points out with admirable clarity the rôle of advertising in the modern economic process.

Production facilities today are wonderfully efficient, but adequate and suitable markets are needed before the most effective organization of production can be achieved.

It is the function of good advertising service to locate and develop these necessary markets on the scale which modern industry requires, and with a selectivity which keeps costs at a minimum.

Many manufacturers, through the use of such services, maintain an active demand for their products—and keep in a position to profit by the economies of large-scale production and concentrated control.

In the cultivation of markets essential to this achievement, the J. Walter Thompson Company has successfully served many of the leading enterprises of this country, helping to work out practical market strategy based upon accurate research and wide advertising experience.

Two folders, entitled "Selling at Home" and "Selling Abroad," have been prepared briefly to show the scope of the services of the J. Walter Thompson Company.

Either or both of these folders will be sent to executives interested. Write to the New York Office and copies will be forwarded promptly.

Five or more electrical appliances, a J. Walter Thompson survey indicates, will be found in 76% of all average households. Electricity now reaches over 19,700,000 American homes. New conditions which electric power develops in the home have a marked influence even on the market for articles seemingly as remote as soap and textiles. Study of such influences, on which sound market strategy is based, enables the J. Walter Thompson Company to prepare advertising which strengthens the position of its clients in their many markets.

J. Walter Thompson Company

New York • Graybar Building • 420 Lexington Avenue

Chicago, Boston, Cincinnati, San Francisco, Los Angeles • Montreal, Canada • London, Paris, Madrid, Berlin, Stockholm, Copenhagen, Antwerp, Warsaw • Alexandria, Egypt; Port Elizabeth, South Africa • Buenos Aires, Argentina; Sao Paulo, Brazil • Bombay, India • Sydney, Australia • Batavia, Java

XUM

French Seamen

whose ancestors tamed the Atlantic before Columbus

SPRUNG from countless generations of seamen, the sailors of Brittany have a maritime tradition not surpassed by any race and to every Breton fisher lad may truly be applied the old sea saying, "Every hair a rope yarn, and his blood is Stockholm tar." ∞∞ They are of the blood of Jacques Cartier who flew the ensign of St. Malo and discovered the St. Lawrence. ∞∞ Unceasing watchfulness is their motto, whether at the helm of a sardine trawler or on the bridge (their ultimate goal) of the "*Ile de France*," the "*Paris*" or the "*France*"... the cabin ships "*Lafayette*," "*De Grasse*" and "*Rochambeau*" or any of the 100 ships that form the French Line fleet. ∞∞ From the commander to the oiler in the hold, they keep alight that flame of trust and honor that was lighted in the dim sea mists of the Breton coast a thousand years ago.

"Rochambeau"
June 7 - July 5 - Aug. 9

• • •

"De Grasse"
June 17 - July 12 - Aug. 12

• • •

"Lafayette"
June 26 - July 24

◆ ◆

"Ile de France"
June 6, 25 - July 11

• • •

"Paris"
June 12, 30 - July 18

• • •

"France"
June 17 - July 3 - July 25

Five and a half days to Plymouth, England

across the "longest gangplank in the world" from the heart of Manhattan, a waiting express for London, a few hours later the covered pier at Havre, three-hour express for Paris.

Along the Brittany Coast

French Line

Information from any authorized French Line Agent or write direct to 19 State Street, New York City

The Plant Man Wears

[*Continued from page 80*]

the cotton had to be of the native type whose bolls never fully open and therefore protect the cotton. Now, able to pick as soon as the cotton is ripe, they are turning to American varieties.

CHINA

India, Africa, Russia, all may some day violently upset the world's traffic in cotton. But upon the development of Chinese cotton hinges an economic event of far greater significance. For it is with the growth of the cotton industry, with the multiplication of textile mills, that China hopes to effect its long-awaited industrialization.

For centuries cotton formed a garden decoration that delighted Chinamen of ancient dynasties who were busy nursing silkworms. Only in the 14th century did Chinamen commence to plant cotton commercially. Now China has four important cotton areas. Most northerly is a great oval of cotton land surrounding Pekin, which, being so far north, is a phenomenon. Below that is a narrow, winding strip that follows the Hwang Ho from its mouth far into the interior. Broader is the third section, starting at Shanghai, running inland along the Yangtze and extending one slim arm southward into the province of Kiangsi. Slight in importance is the fourth, far in the south, near Burma.

Cotton in China was long a sickly industry. Exports were few because all the buyers of the world knew that Chinese cotton was adulterated to a disgraceful extent. Certain organizations tended to stop this treatment of cotton and to better its cultivation. At the same time the ban on opium-growing gave cotton a great impetus.

Land in China has been raised to its highest state of productivity. Usually wheat is grown before cotton and when the wheat is ready for reaping in May, cotton is planted broadcast, later hoed and thinned with infinite trouble. Great confusion marks the farming system, one man often having no more than half an acre. This prohibits expenditures on good fertilizers and modern equipment, and the farthest away from actual hand labor the average farmer gets is a rough wooden plough, metal tipped, drawn by oxen or buffaloes.

Lack of statistics makes the Chinese crop hard to estimate. Something less than 2,000,000 bales is the generally accepted figure. Usually China imports more cotton than is exported, and the textile industry is developing rapidly. The country, growing one-seventh as much cotton as North America, has one-tenth as many spindles. With the largest home market in the world, and one too poor to purchase wool or silk, with a growing supply of raw material, with cheap labor and power, China may eventually cease importing cotton and cloth. This will mean a loss of a great market for the Western textiles and a loss of a market for raw Indian cotton, but on the other hand the industrial progress of China means a wider market for machines, building materials, luxury goods, and all the other incidentals of progress.

SOUTH AMERICA

Many of the nations of South America are admirably suited for cotton, but, lacking the stimulation of an Empire Cotton Growing Corp., their importance is great only in the remote future. Brazil, however, seems forging to the lead at present, although the Argentine possesses great potentialities. Cotton has been grown in Brazil since 1570, and from 1781 to 1800 Lancashire's chief source of supply was this nation. With the abolition of slavery in 1888, however, cotton was practically abandoned and only recently, disgusted with losses sustained from rubber and coffee, have Brazilian farmers turned again to cotton. The area adaptable for cotton is larger than that in the United States, labor is cheap and kept plentiful through the encouragement of immigration, the soil has a high yield, and all things point to Brazil's soon becoming an even more important factor in cotton production.

MEXICO

Mexico, to cotton men in the United States, remains famous as a cotton nation chiefly for having been the starting point of the boll weevil's march and presumably that of the pink boll worm. But here too is a nation with great cotton potentialities. While the crop is small now, the area suitable for cotton is large and filled with an agricultural population. Only political unrest stands in the way of a great systematic increase.

WHICH HOTEL WILL HE CHOOSE, ON HIS NEXT VISIT?

• BACK from a successful business trip, ready to plunge into the work that has accumulated on his desk. First, the day's mail. He opens a long, crisp envelope bearing a familiar crest, and takes from it a letter. It is a brief, sincere message of friendship and appreciation from the hotel at which he stayed. It is on the private stationery of the President. And it is signed—not by a room clerk—not even by the manager—but by the head of the great chain of hostelries, himself. • The letter touches his mind with a sense of warm, personal contact. He has ample proof of its genuineness. Not only does its signature carry conviction, but as the business man holds it to the light he sees the famous watermark of Coupon Bond. There will be no question as to "where to stop" when next he travels that way. • Coupon Bond is a supreme achievement in bond paper making. It is strong, clean, vigorous—the master paper chosen by masters of American business for their executive letters. • We shall be glad to send you, on request, our portfolio, "The Modern Trend in Letterheads," and a new booklet, "The Executive Letter." (In writing for them please use your business stationery.) ¶ *Coupon Bond is but one paper in the Eagle-A Line of Bonds, Ledgers, Writings, Index Bristols, Offsets, Covers, Book Papers, Mimeograph and Manifold Papers—the* right *paper for every business purpose.*

AMERICAN WRITING PAPER COMPANY, INCORPORATED
HOLYOKE, MASSACHUSETTS

EAGLE·A·PAPERS

BRING YOUR SALES MANAGER INTO YOUR OFFICE..

..without taking him out of his!

YOUR sales manager's office may be "just down the hall" or at the other end of the building . . . Regardless of distance you may enjoy instant voice-to-voice conversation with him at any hour of the day thru the DICTOGRAPH SYSTEM OF INTERIOR TELEPHONES.

DICTOGRAPH cuts the distance factor out of inter-office communication. As simply as you switch on an electric light, you "switch" on the voice of an individual by merely raising a key and talking. If that person had just stepped into your office, his response could not be more immediate.

With startling realism, his words coming from the DICTOGRAPH loud speaker give you the information you desire—*promptly!* A sensitive microphone in the DICTOGRAPH cabinet picks up your voice and carries it clearly to any other office. At no time is it necessary for you to leave your desk or take a man from his!

Your department heads make their reports, answer your questions, even engage in a "conference" without the nuisance of inter-office visiting—without tieing up the switchboard with internal calls. DICTOGRAPH uses no switchboard—there are no mouthpieces or receivers to handle.

In large offices and small, in factories and stores—in any organization where speed, accuracy, and executive control are valued—DICTOGRAPH communication is a daily comfort and economy.

It will take but a few moments to show you DICTOGRAPH in actual operation on your desk and it will not obligate you in any way . . . Consult the telephone directory for our address in your city. Or write direct to DICTOGRAPH PRODUCTS COMPANY, Inc., 226 West 42nd Street, New York, N. Y.

DICTOGRAPH
SYSTEM OF INTERIOR TELEPHONES
The Modern Miracle of Business

Rembrandt's Painting of Solomon's Mother

[*Continued from page 63*]

as he loved the idea and substance of soldiery, had just successfully completed the Seven Years' War in which he not only embarrassed Count von Brühl's Saxony, but Austria, France, Russia, and Sweden as well. In these miserable times, his collections must have been fardels which Count von Brühl could ill afford to bear.

In Dresden, then, for an unknown sum, he sold Bathsheba across the borders of Europe to Paris, in whose salons her charms had already been described. The buyer was one M. Poullain, a celebrated collector of paintings on his own account, and a high-ranking collector of taxes for his king. It was an opulent time on the plane of court life; few persons on this licentious and sportive eminence paid any heed to the volcanic beginnings below. It was only natural that Rembrandt's lush Bathsheba should be received at such a court. Bathsheba stayed with M. Poullain while Louis XV was succeeded by the virtuous and genial Louis XVI, from whom the proletariat hoped for reform but who combined with his prowess in eating, hunting, and lock-making a genius for the selection of disastrous financial advisers.

The French Revolution

In 1780, while the elegance of Paris and its outlying châteaux was still sustained beneath this uncertain sceptre, the *Toilet of Bathsheba* again changed hands. M. Poullain's estate obtained 2,400 francs ($480) from no less significant a figure in French art than Jean Baptiste Pierre Lebrun, art-dealer, critic, passionate gambler, and husband of the renowned Vigée Lebrun, who painted the Prince of Wales, Lord Byron, more than twenty portraits of Marie Antoinette, innumerable pictures of herself, and whose musicales were so crowded and distinguished that Marshals of France were frequently to be observed squatting on the floor. "I remember," she wrote, "that the Maréchal de Noailles, who was very stout and very old, one evening had the greatest difficulty in getting up again."

The gentle M. Lebrun's unhappy liking for games of chance made it difficult enough for him to maintain his collections, but there was another factor which speedily prevailed and which made it highly advisable for him to sell Bathsheba: the French Revolution. In 1791 Louis XVI fled into the country and returned a prisoner. All was wrack and confusion in France. M. Lebrun tried to sell Bathsheba, but received such unsatisfactory offers that he bought the painting in for 1,200 francs ($240), half the price he had originally paid for it.

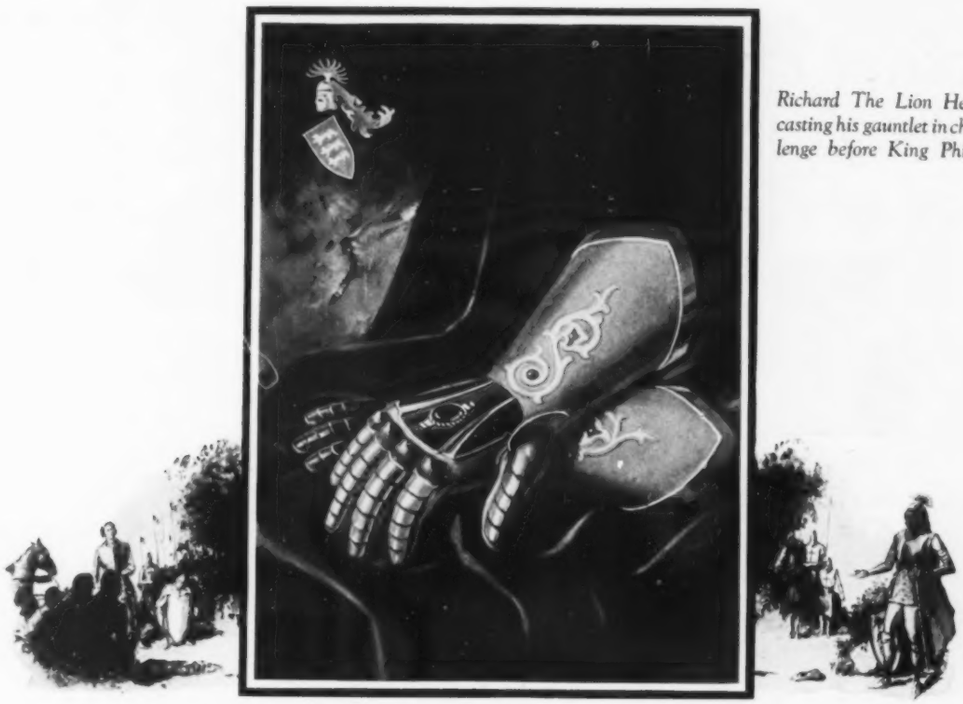
1814—Sir Thomas Lawrence

Expedience, however, must at last have forced him to part with his prize; as Bathsheba once went from an upset Holland to a relatively stable Saxony, so she now went from an upset France to a relatively stable England. We next hear of her, twenty-three years later, in 1814, when Alexis de la Hante, a dealer who had probably admired her at the Lebruns' in Paris, sold her in London for 105 pounds ($510). This year was one of baited breaths and a crescendo of rejoicing in England; bankers stopped each other on Threadneedle Street to talk of Wellington's latest deeds; England's wars against Bonaparte were no longer fought alone. British court life was almost as elaborate as its French counterpart of pre-Revolution days. It must surely have been at this time that Sir Thomas Lawrence, who had succeeded Reynolds as Britain's favorite court painter, acquired the Rembrandt. Thomas Lawrence was the son of an innkeeper of Devizes, England. At the age of five the boy amazed the patrons of the Black Boar with his ability to catch their likenesses with a crayon. Lifted up on a hogshead, he would declaim Milton and Shakespeare. Nor did this precocity fail; at twenty-one he was elected to the Royal Academy and had already begun to paint the patricians of England. He succeeded to the suave, florescent style of Reynolds and Gainsborough, the style best adapted to the delineation of velvets and jewels, of faces haughty and imperturbable.

When he died in 1830, his belongings were auctioned at Chrystie's; Bathsheba appeared amidst Reynoldses, Raphaels, Giorgones, Veroneses. She fetched 157.10 pounds ($765); another Rembrandt, depicting the accusal of Joseph by Potiphar's wife, brought the top price of 570 pounds ($2,770).

1830—H. M. the Queen

England was now entering the



Richard The Lion Heart casting his gauntlet in challenge before King Philip

Gauntlets of Richard, Painted by Ludwig Gassner

Answering the CHALLENGE

The mailed gauntlet in the days of Richard The Lion Heart was significant of a challenge. Today—out of the hustle and bustle of modern business methods—Lyon Metal Products have answered the challenge—with steel—answered the challenge for system, speed, service and beauty—answered the challenge for an ever-increasing growth of business. Lyon Metal Products are built by skilled craftsmen—built through years of experience—built to speed up every transaction—to conserve cost and render better service—built to save space and increase efficiency—built to endure wear and tear—built to answer any challenge! Adaptability is an outstanding feature of Lyon equipment—in factory or office, store, schoolhouse, country club or in the repair shop, Lyon has equipment for every purpose, adapted to your specific needs, easy to move and convertible to all conditions. You will enjoy reading "Equipment and Man Power." Your copy is awaiting your request.

LYON

LYON METAL PRODUCTS, INCORPORATED
Converters of Sheet Steel into Practical Conveniences
AURORA, ILLINOIS

STORAGE AND DISPLAY EQUIPMENT IN STEEL
STORE FIXTURES · COUNTERS AND SHOW CASES
SHELVING · LOCKERS AND CABINETS
FOLDING TABLES
AND CHAIRS

Another Phoenix rises *from the* Ashes *of* Pleasure

So steadily has the popularity of Lucky Strikes been rising, that hardly was the newest American Tobacco Company factory at Reidsville, N. C., completed, before it became necessary to make plans for another and larger plant.

This Lucky Strike factory is now under construction at Richmond, Va. Both it and the adjoining power plant will be representative of the best developments in design, architecture and equipment of this progressive age. Coupled to these features will be elements to add the dignity and beauty which contribute to the "esthetic efficiency"—so much a part of the modern workshop.

J. E. SIRRINE & COMPANY

Engineers

Greenville **South Carolina**

long and economically healthy age of Victorianism; Parliamentary reform was well begun. Stomachs accustomed themselves to elaborate and copious foods, interior decoration acquired more tassels, and rarities like the *Toilet of Bathsheba* began to increase in value.

In 1831 one Vernon sold the canvas to one Emmerson for 160.13 pounds ($780). Next year Emmerson accepted an offer of 252 pounds ($1,225), and Bathsheba traveled back to the Low Countries to Brussels, into the collection of one Colonel de Biré. Nine years later she returned to Paris, politically confused and corrupt under Louis Philippe, but battening, expanding, and modernizing on its corruption. There Colonel de Biré sold her for 7,880 francs ($1,575) and, after a circuitous career of approximately a century, she returned to her native Holland where the Chevalier Steengracht van Ostkapelle of The Hague, director of the Royal Picture Gallery, was fast atoning for Dutch lapses of taste by collecting as much as possible of the great Dutch art which Dutchmen had been willing to sell to foreigners.

B. Altman & Co.

Bathsheba spent another half-century with the Steengrachts in Holland. During this period a new and overwhelming fiscal force was becoming increasingly apparent in the art world, U. S. finance. American fortunes had been made, and numerous fortunate Americans were prepared by their predilections and pocketbooks to become patrons of the arts. Among these was Benjamin Altman, the founder of B. Altman & Co., dry goods merchant of New York City. Benjamin Altman determined to sell and sold the finest possible merchandise at honorable, not extortionate, prices. His Fifth Avenue store ignored fads unless by persistence they became conservatively tasteful. He was never interviewed, nor was his photograph ever published during his lifetime. Indeed his nature is perhaps best suggested by the fact that he was a great expert on porcelain and, according to his doctor, was recognizable by not more than a hundred of his fellow townsmen. His art collection was and is of the first importance. He was succeeded by Colonel Michael Friedsam, a superior merchant, who is himself in the front rank of American art patrons.

In 1913, when the Steengracht collections were offered at auction in Paris, Mr. Altman was represented by that most suave and powerful of art-dealers, Sir Joseph Duveen. The entrance of the Americans into art collecting, the increasing prosperity and dilettantism of the Western World had done amazing things to values in the seventy-two years that Bathsheba had been absent from the auction rooms. When she appeared upon the block, bidding began at more than 150,000 francs, and Mr. Duveen was soon pronouncing 600,000 francs as his offer while his rival, Mr. Wildenstein, countered with nods of the head signifying a raise of 10,000 francs ($2,000) apiece. Gradually a group of competing dealers were forced out.

Mr. Wildenstein nodded—970,000 francs.

Mr. Duveen nodded—980,000 francs.

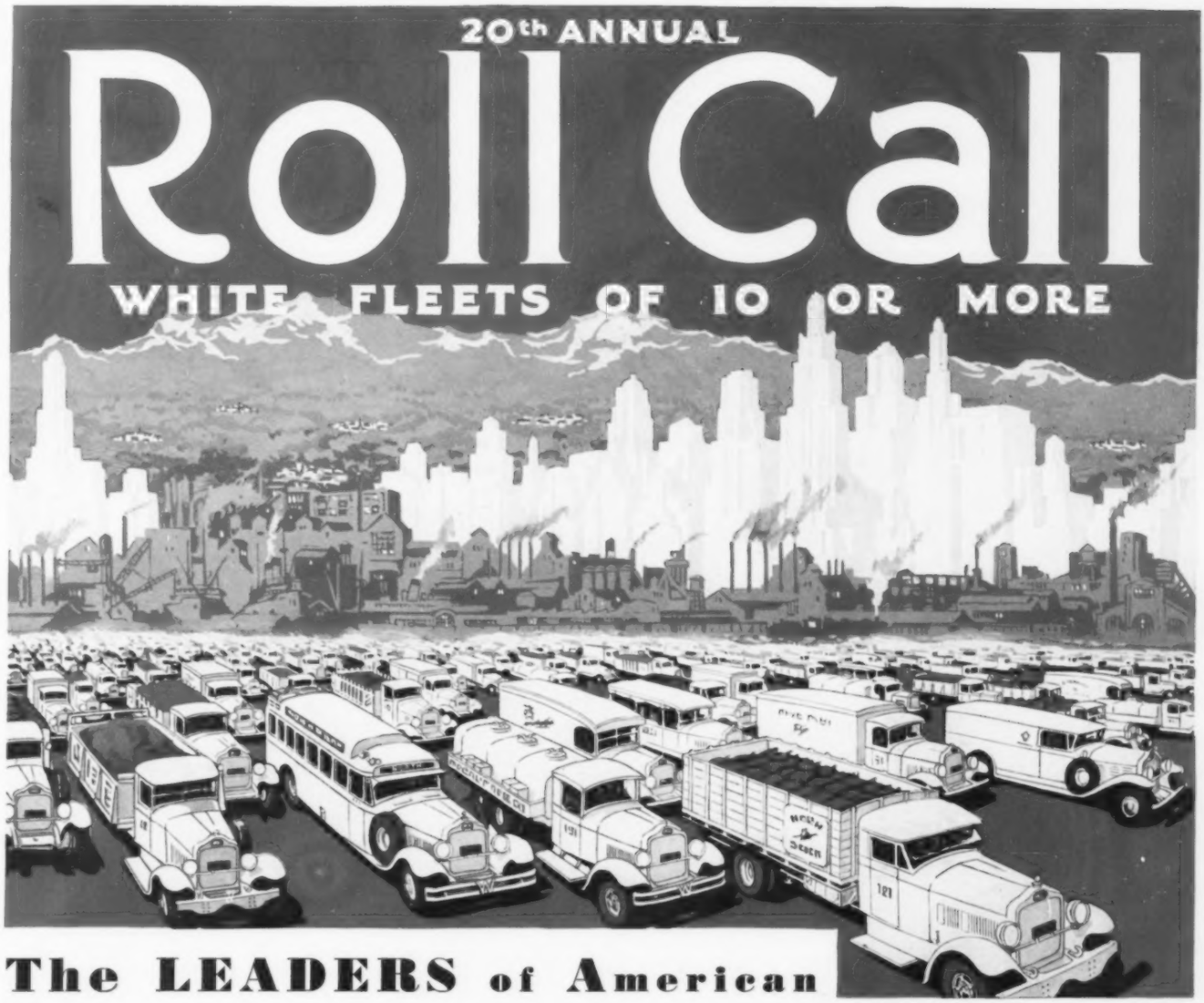
Mr. Wildenstein nodded again—990,000 francs.

When Mr. Duveen bid a million francs ($200,000), Mr. Wildenstein's head was motionless.

At last, the Museum

In one of the last years when a franc was still a franc, Rembrandt's *Toilet of Bathsheba* had brought what at the time was the highest price ever paid for any painting at public auction. It is not likely, however, that she will soon be sold again, for in 1913 the Altman collection was bequeathed to the Metropolitan Museum of Art, and that repository seems as substantial, if not more so, as the city of New York itself. Bathsheba's status as the subject of a six-figure painting entitles her to the consideration of financiers and to the financially ambitious in general. But what is perhaps stranger, it also entitles her to the consideration of esthetes. For although there is no direct connection conceivable between the financial and esthetic value of a work of art, the fact remains that those pronounced great by generations of critical specialists gradually command the highest prices. Financiers, in this field, at least, are influenced by men who deal in nebulous uncertainties, and the process of valuation provides that the economic value of a painting shall be no insignificant key to its position in more subtle estimations.

Had Bathsheba's first buyer kept his $106 banked at 4 per cent interest compounded semiannually, his estate could now withdraw $242,428.89. Had he kept Bathsheba, his estate could probably realize a great deal more. For Bathsheba's final price has been greatly exceeded in the case of other paintings, and there is no telling what sum she might now command.



The LEADERS of American Business build their transportation fleets with WHITES

The great White Roll Call, published annually for the past twenty years, again tells the greatest transportation story ever told—1408 of the country's foremost owners operating 49,250 Whites in fleets of ten or more—2739 more Whites than last year—97 additional owners who are now operating fleets of ten or more—and not listed are tens of thousands of additional owners operating fleets of less than ten, or single Whites. *The White Company, Cleveland.*

WHITE

A COMPLETE LINE OF FOUR AND SIX CYLINDER

TRUCKS & BUSSES

GENERAL

COMPANY, INC.
INCREASE
DECREASE*
GROSS SALES:
$550,498.75
36,312.49*

AVERAGES

His handsome cloak hides the ugly wastes of Business

THE manufacturer looked up at his friend, the banker, with pained surprise.

"Why do you say my figures should go deeper?" he demanded. "Doesn't my statement show a record year . . . in sales, in net earnings, in increased cash reserves? All along the line, in costs and net results, my General Averages show a big improvement. What else do I need to know?"

"Many things!" replied the banker drily, "if you're going to cope with the new conditions in the gruelling year ahead.

"When a business is going great guns, old man '*General Averages*' isn't especially informative about its possible weaknesses. He has a genial way of showing up the bright side of things and concealing the wastes. In emphasizing the profits he diverts attention from the parasites that may some day claim a costly reckoning.

"For instance, your '*General Averages*' show that your sales cost per dealer is less than 8%. But have you secured a detailed break-down of this pleasing percentage? It may startle you to know that 20% of the dealers in your trade do 85% of the retail business. Many of the remaining dealers cost more to sell, contact and service than the gross dollar volume of their purchases.

"Again, your '*General Averages*' indicate that you are turning your inventory three times a year. But do you actually know how many items in your line are genuine revenue-makers?

"The government's Business Survey in Louisville disclosed that in several prominent wholesale houses, items which produced only 14% of the total sales required 42% of the inventory investment. And these were prosperous houses. Their bland and rosy '*General Averages*' kept them in ignorance of their many profit-drones and wastrels.

"In the flood-tide of a seller's market, a business can stand many abuses without feeling or even suspecting the drains. But when competition increases, the whole issue of dividends versus deficits often hinges on the elimination of waste.

"That's why, on the eve of this new and more competitive age, I warn you against the wiles of that jovial flatterer . . . '*General Averages.*' Sound business men today are keeping him on the grill, in every department of their businesses . . . ruthlessly tearing down his round figures and finding out what is back of them."

GET THE LOW-DOWN ON "G. A."

Daily and Accurately

IT IS easier today than ever before to floodlight every department and operation of your business with the penetrating rays of adequate facts and figures.

Put the whole job up to Remington Rand. Turn to the one centralized headquarters for all of the systems and machines you need to solve your problems of business control.

Remington Rand Service is unbiased and all-embracing. It is not a special pleader for any one type of appliance or method. It is a merger of all of the best systems and machines for facilitating the functions of any business.

A telephone call will bring a Remington Rand man to your office . . . a trained business analyst who will confer with you impartially on any phase of your business operations . . . without involving you in any obligation.

Remington Rand

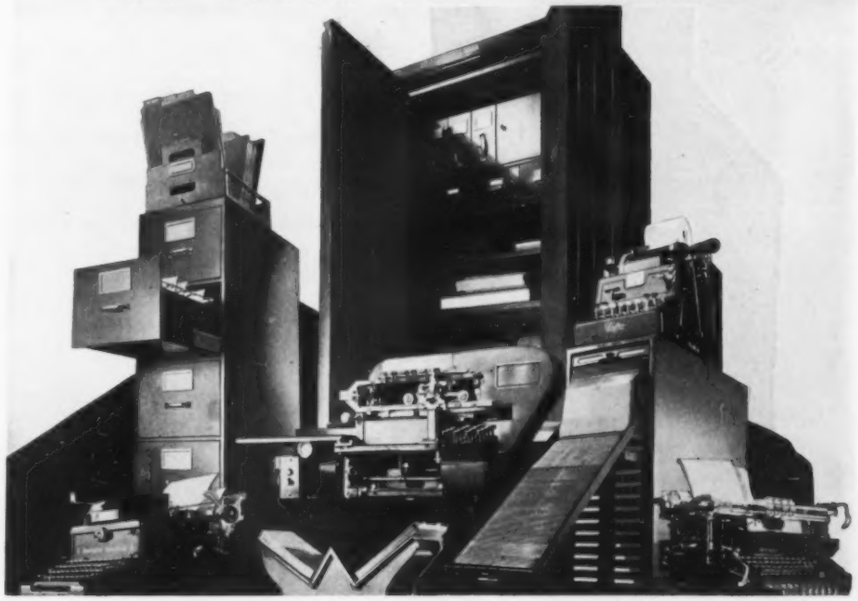
BUSINESS SERVICE

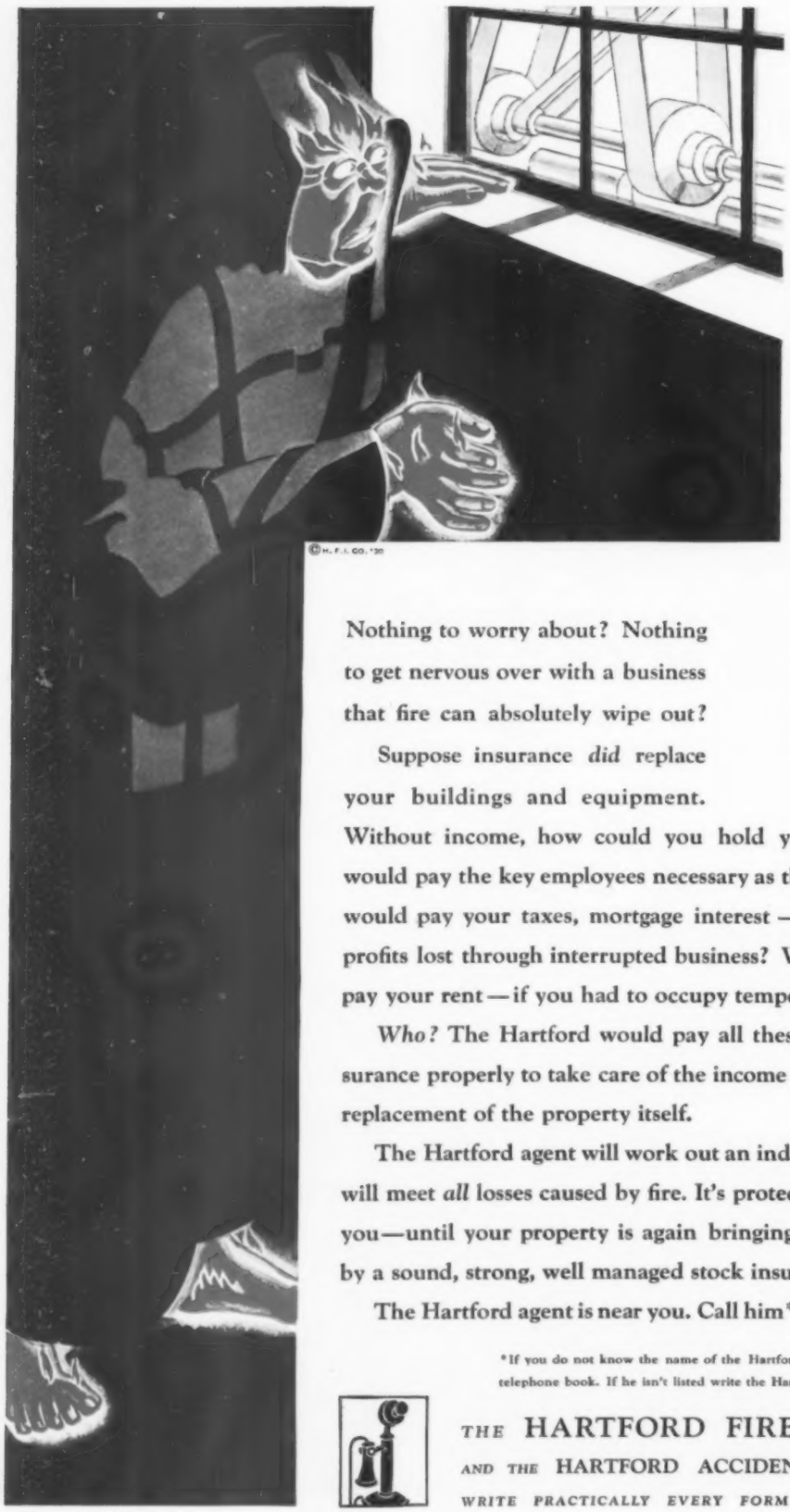
Executive offices, Buffalo, New York. Sales offices in all leading cities.

LIBRARY BUREAU *Filing Systems and Indexing Service* . . . SAFE-CABINET *Record Protection Devices* POWERS *Accounting Machines* . . . INDEX VISIBLE RAND & KARDEX *Visible Records* . . . DALTON *Adding and Bookkeeping Machines* . . . KALAMAZOO AND BAKER - VAWTER *Loose Leaf Equipment*

REMINGTON *Typewriters and Accounting Machines*

THE GREAT EMANCIPATORS





"Don't get nervous — I'm just looking around"

"YOU'RE NOT AFRAID OF ME, ARE YOU? YOU HAVE FIRE INSURANCE TO REPLACE THE VALUE OF YOUR PROPERTY IF I ACCIDENTALLY DESTROY IT, SO THERE IS NOTHING TO WORRY ABOUT", SAYS FIRE.

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Suppose insurance *did* replace your buildings and equipment. Without income, how could you hold your business structure together? Who would pay the key employees necessary as the backbone of your organization? Who would pay your taxes, mortgage interest — and such fixed expenses? What about profits lost through interrupted business? What about unfilled orders? Who would pay your rent — if you had to occupy temporary quarters during reconstruction?

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The Hartford agent will work out an individualized plan of insurance for you that will meet *all* losses caused by fire. It's protection that goes *every inch of the way* with you — until your property is again bringing in income. It's protection, too, backed by a sound, strong, well managed stock insurance company.

The Hartford agent is near you. Call him* now. It may save the life of your business.

*If you do not know the name of the Hartford agent look under "Hartford" in your telephone book. If he isn't listed write the Hartford Fire Insurance Co., Hartford, Conn.

THE HARTFORD FIRE INSURANCE CO.
AND THE HARTFORD ACCIDENT AND INDEMNITY CO.
WRITE PRACTICALLY EVERY FORM OF INSURANCE EXCEPT LIFE

A Bourgeois Engine

[*Continued from page 65*]

time. Mass production is not yet part of the Diesel vocabulary. Meanwhile, however, Diesels are playing a big part in supplementing steam and water power in our electric plants. It is estimated that half the 1,300 municipal power plants in the United States use Diesel power wholly or in part.

Stationary and semi-stationary direct power

Under this heading come several miscellaneous but noteworthy uses of the Diesel. Pumping is one of the most important. Practically all of the 100,000 miles of pipe lines in the country are equipped with Diesel pumps to urge the oil along on its way. This is logical because oil may frequently cost the companies as little as two or three cents a gallon, while the complete elimination of fire hazard is vital in the handling of oil. There are also many Diesel-propelled pumps in irrigation districts.

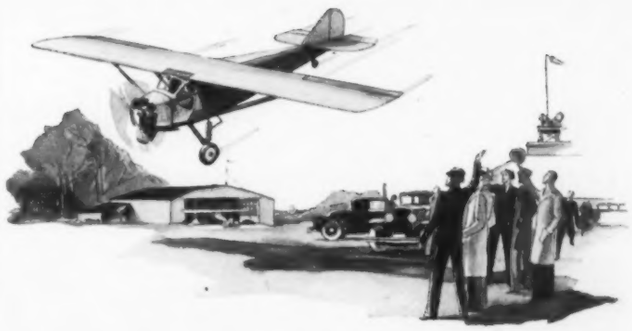
An increasing field for Diesel engines is found in excavating shovels, where the fuel saving over inefficient steam engines is sufficient to reduce operating costs as much as 40 per cent, and over gasoline power as much as 60 per cent. When a shovel strikes bedrock, however, it needs both power and low speed. Hence electric drive is often resorted to.

Aircraft

When we get into the air with the Diesel, we enter on the engine's potentialities rather than its actualities. Most exciting potentialities, however. The Diesel engine promises to promote safety and economy in an industry that has great need of both. Safety from fire is assured by the use of a fuel that will not burn or explode at the temperature of the exhaust pipes and the cylinder heads. Another aviation hazard, stalled motors, is practically eliminated by the Diesel, which has no ignition to get out of order and which can be stopped only by cutting off its fuel. As for economy, it is claimed that Diesel motors will not only use cheaper fuel but that they will go farther on the same bulk. One evidence of Diesel potentialities in aviation is that many large Diesel manufacturers are experimenting with an engine for aircraft. The two most promising developments up to the present time, however, have not come from the regular Diesel manufacturers.

Pratt & Whitney, noted builders of airplane engines, have announced successful tests of a semi-Diesel motor. It has the low pressure and electric ignition of gasoline motors, and yet it will burn fuel oil. The secret lies in a device patented by Stephen A. Hasbrouck, Pratt & Whitney engineer, which secures more accurate delivery of the fuel to the cylinders and more perfect atomization after it gets there. This motor is as yet somewhat of an embryo, however. The first full-fledged Diesel engine for aircraft made its appearance at the Detroit Air Show this April. Designed by the late Captain L. M. Woolson of the Packard engineering staff, it weighs 510 pounds as against 480 pounds for the same horsepower (225) gasoline engine, and costs $4,025, as against $3,900 for a good gas engine. Its advantages in the line of safety, economy, and dependability would seem to surpass even the expectations of Diesel enthusiasts. *Safety:* it uses fuel that will not catch fire from an open flame, that will actually put out a fire when poured over it. *Dependability:* it will fly upside down as well as right side up; it will start readily in weather ten degrees below zero; it automatically adjusts itself to changes in altitude, so that the pilot need not worry about his mixture being too "lean" or too "rich"; a pilot has shut it off at 5,000 feet, has dived to within 50 feet of the ground, and has restarted it instantly with full power. *Economy:* in a test, it flew from Detroit to Miami, consuming $8.50 worth of fuel oil as against the $32 worth of

© *Brown Bros.*
RUDOLF DIESEL



"and the dealers turn out"

Sales meetings are easy to organize when executives arrive by plane

DISTRICT sales meetings were an old story to dealers of a certain large manufacturing company in the mid-west. Try as the company officials would, they experienced difficulty in bringing together groups of dealers by any of the usual methods.

"This situation has been radically changed," says the sales manager, "since we purchased a Ryan and our officials travel by plane. Now we simply advise a distributor in advance that a district sales meeting will be held on a certain date *and the dealers turn out* —assemble at the flying field to meet us." In this way, a personal relationship has been established between the company officials and the men in the field which has resulted in greater dealer goodwill and in turn, increased sales.

With a Ryan, executives are able to contact a nation-wide organization with ease—to meet *frequently* important business associates who formerly could be seen only once every so often. And by saving valuable time on business trips, a Ryan adds more working days to every year.

Three Ryans — the new Foursome, the Brougham for six and the new Wasp-Powered Brougham — are available to serve business. All are built to the same high standard — all have characteristic Ryan performance.

We will gladly tell you more about Ryan transportation. Write—

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Pinaud

PARIS · NEW YORK

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gasoline that would ordinarily have been consumed on the trip. With selling points of such calibre as these, it is not surprising that the Packard aircraft-engine factory is operating at its full capacity and that Packard Diesels are now optional equipment on Ford trimotored planes.

Locomotives

When Westinghouse delivered Locomotive 9000 to the Canadian National Railways, the reverberations spread through the press of the country. A test was made, with sensational results. Canadian National 9000 hauled a train from Montreal to Toronto for $25 in fuel, as against $80 for a steam engine on the train ahead. Performance was perfect. This electric locomotive, which generated its own power with Diesel engines, was going to open a new era of railroading. And yet no such locomotives are now being built, and there is a strange dearth of reports on Canadian National 9000 and its progress. There would seem to be difficulties still to be overcome.

On railroads, as at sea, the giant turbine and its superpower is the chief Diesel rival. Where traffic density is heavy, overhead lines carrying electricity from superpower plants are more logical sources of power than individual Diesels installed on each engine. The Diesel electric locomotive today is chiefly useful to industrial companies for switching and short hauling. Operating over a comparatively narrow speed range, to which it has proved feasible to adapt electric transmission, it is rendering good service. The New York Central recently ordered thirty-five of the Ingersoll Rand-General Electric type. The future of Diesel power for locomotives depends largely on the progress of engineering in solving transmission problems.

Automobiles

Entering the automotive field in our survey of Diesel uses is passing from the potential to the improbable. Fuel measurement has already been indicated as the great bar to the Diesel's stepping down into the proletariat of motors under 100 horsepower. A six-cylinder Diesel motor delivering 35 horsepower to drive a car 25 m.p.h. must separate a gallon of fuel into 70,000 parts (for lower speeds separation must be even greater). These tiny specks of oil must one by one be injected at the rate of 3,000 a minute into a cylinder against a pressure of from 500 to 1,000 pounds. As it now exists, the Diesel engine will not perform these miracles. Its measuring problem makes it too inflexible an engine for automobiles, and is a decided draw-back in aviation as well. Automobile engines must have a wide and instantly controlled range of speed. They must slow down to fifty revolutions per minute to change gears, and then accelerate in no time at all to as much as 3,600 r.p.m. The Diesel, as it exists at present, is too sluggish to perform these gyrations.

Engineers may some day perform the miracle of adapting the Diesel to automobiles. An eminent automotive engineer, Louis Coatalen, chief engineer of the Sunbeam Motor Car Co., predicts that his new Diesel engine will soon be running the world's automobiles. One may be allowed a grain of scepticism. Such a change would destroy a great Diesel selling point: cheaper fuel. Fuel oil is cheap because it is a by-product of gasoline, just as gasoline was once cheap as a by-product of kerosene. A balance between the cost of fuel oil and of gasoline would probably result from the Dieselization of the automotive world. There is also a natural objection to the scrapping of large investments that such a change would entail in both the oil and the automobile industries. Ecònomically, the outlook for the Diesel in this field must be regarded as distinctly unpromising.

Bourgeois Brutus

Our survey has revealed an engine that is bourgeois to the last. Its steady, dependable efficiency is a bourgeois virtue, as is its hatred of waste. And, like all bourgeois, it is in the end undone by its own virtue. The ancient Brutus was no more inflexibly moral than is the Diesel. With bourgeois stubbornness it resists the jazzing up that is the weakness of the age. Conservatively, it refuses to climb the giddy heights of mass power production to which the turbines have insanely soared. Stolidly, it scorns the neurotic flightiness of the gasoline engine. The dynamic pace of the age rewards its solid virtues only with the third place in the power world. Yet the Diesel commands the respect that merit always compels, and in its bourgeois way it probably prefers such respect to the enthusiasm that its more sensational rivals arouse. It plods stoutly throughout the United States and abroad, behind the turbine and the gasoline motor, an admirable if somewhat unimaginative prime mover.

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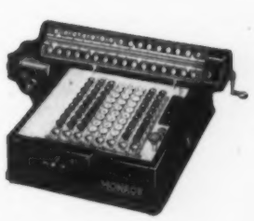

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Allied Chemical & Dye

[*Continued from page 83*]

of the world's nitrogen fixation (including Allied's) is now carried on. The Haber-Bosch process does not (of course) manufacture nitrogen, but it does manufacture a solution of ammonia, which is one part nitrogen to three parts hydrogen. These gases do not unite at ordinary conditions, but the Haber-Bosch process subjects them to very extraordinary conditions indeed. In one variation of the process, they are heated to a temperature of from 500 to 600 centigrade (five to six times the heat at which water boils) and put under a pressure of 200 atmospheres (or about 3,000 pounds to the square inch), and under these conditions and in the presence of a catalyst (iron to which small amounts of aluminum and potassium oxides have been added) they do unite to form ammonia. From ammonia it is simple to make nitric acid for war use or either sulphate of ammonia or sodium nitrate for fertilizing use. Results of the Haber-Bosch process are best seen in the collapse of the Chile nitrate monopoly. Chilean producers, after a losing effort at fighting the synthetic competition (an effort resulting in the price collapse of 1926-27), finally conceded the superiority of art over nature and made a price-fixing agreement with the German producers. In 1928 Germany produced 740,000 tons of fixed nitrogen; America produced 184,300 tons and Chile 429,800 tons of the natural product. Now it appears to be possible that the Chilean government will cut its tax on nitrate export by $12.50 a ton, thus allowing the country's producers to undersell both I. G. Farbenindustrie and Hopewell. It is not yet clear, however, how Chile will then balance its budget.

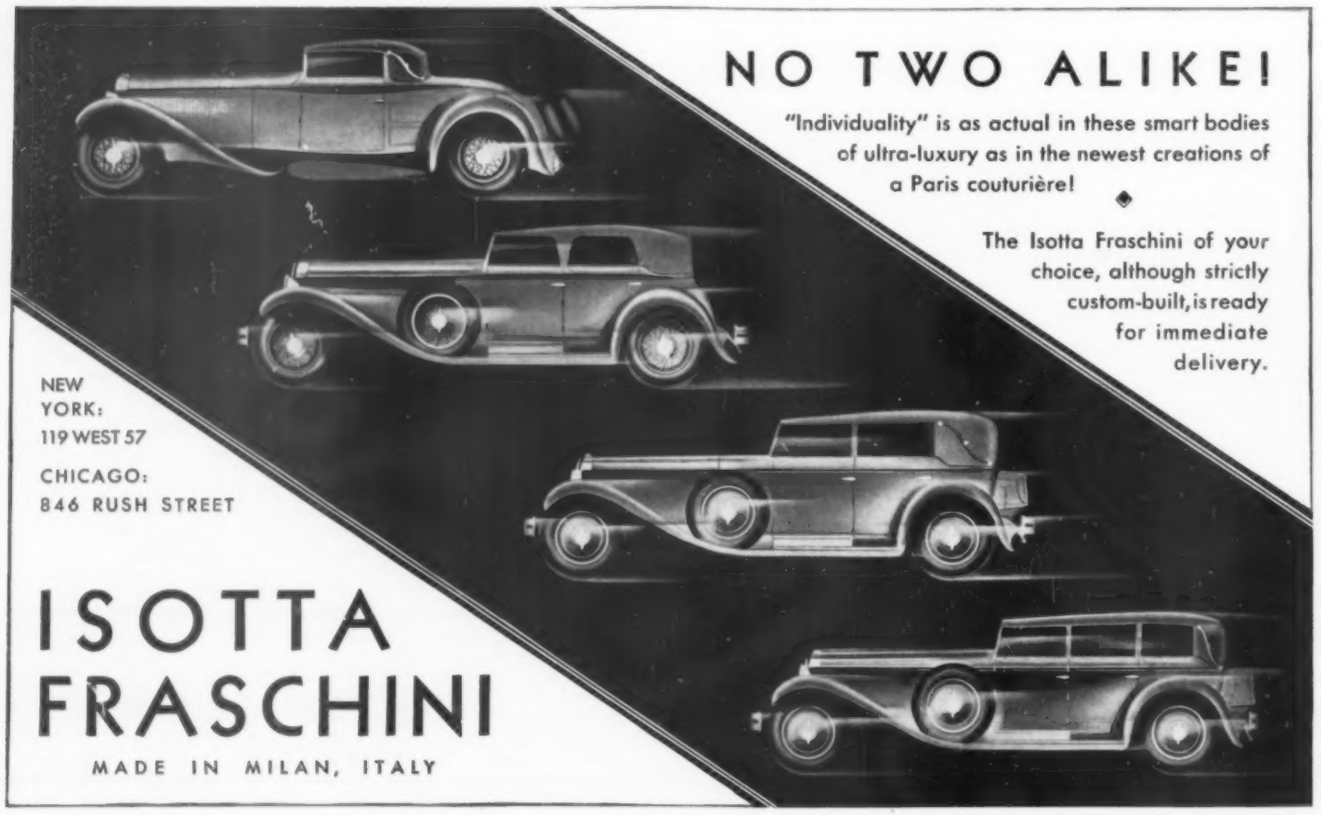
Allied's fixation plant at Hopewell, which went into production in 1928, is reported (by the *Journal of Commerce*) to have a capacity of 350 tons a day. The 1930 units are still under construction; when the entire program is completed, an annual capacity is forecast of from 350,000 to 400,000 tons of nitrogen. This compares with the German production of 750,000 tons. It is inconceivable that Allied, staking so large an investment in Hopewell, should be unwilling to meet both the present Chilean threat and the potential competition of the large German capacity. The issue, after all, will depend upon production costs. Certainly I. G. Farbenindustrie no longer disregards Allied products in the world market. And it must be said that if the United States *does* take over an industry as firmly entrenched across the water as the production of synthetic nitrogen, Allied will have offered a notable service to the country.

Allied faces

Thus far our personal approach to the Allied Chemical & Dye Corp. has been solely through its reticent president. There are, of course, other familiar faces in the Allied scene. Since even chemical companies do not combine without some merging mind acting as a catalytic agent and since Allied came into existence as a merger of five large chemical companies, the next step in the process of untangling Allied's personalities must deal with its origin. From one point of view, the Allied birth is simply enough described. The late Dr. William H. Nichols, who in 1920 headed the General Chemical Co., is usually credited with having inspired the merging of General Chemical, National Aniline & Chemical, Barrett, Solvay Process, and Semet-Solvay companies into a well-rounded American chemical organization dominating the strictly chemical field and making American chemistry proof against foreign competition. (Atmospheric Nitrogen was later created by the group.) Certainly the revered Dr. Nichols must have played a large part in the formation of Allied, since he was Allied's chairman from the formation of the company to his death in 1930.

Thus Dr. Nichols, but the merger also brought into the new American company a personality—or rather set of personalities—which may be crystallized out of the Allied solution. To reach them it is necessary to travel across the Atlantic, for although they are a cosmopolitan and world-wandering family, the Solvays are native to Belgium. And their connection with Allied becomes sufficiently obvious upon remembering that the Solvay Process and the Semet-Solvay companies are two vital links in the Allied chain.

The Solvay family (which is an old family with a great many members) has a household wealth of possibly a quarter of a billion dollars, large for Europe. The founda-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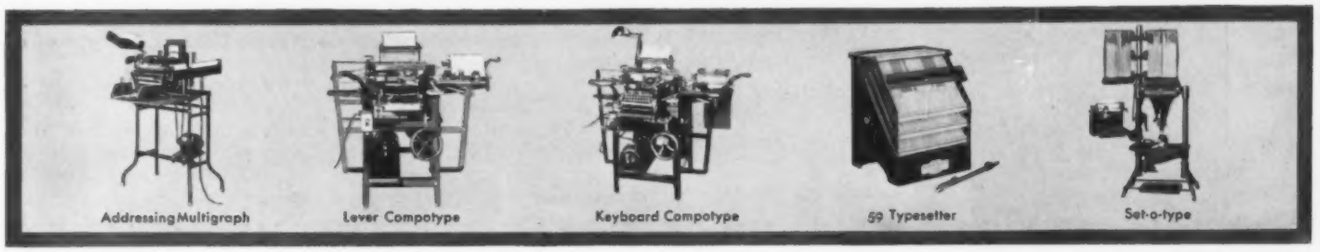

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GLEN SPRINGS

THE AMERICAN NAUHEIM

Allied Chemical & Dye

[*Continued from page 130*]

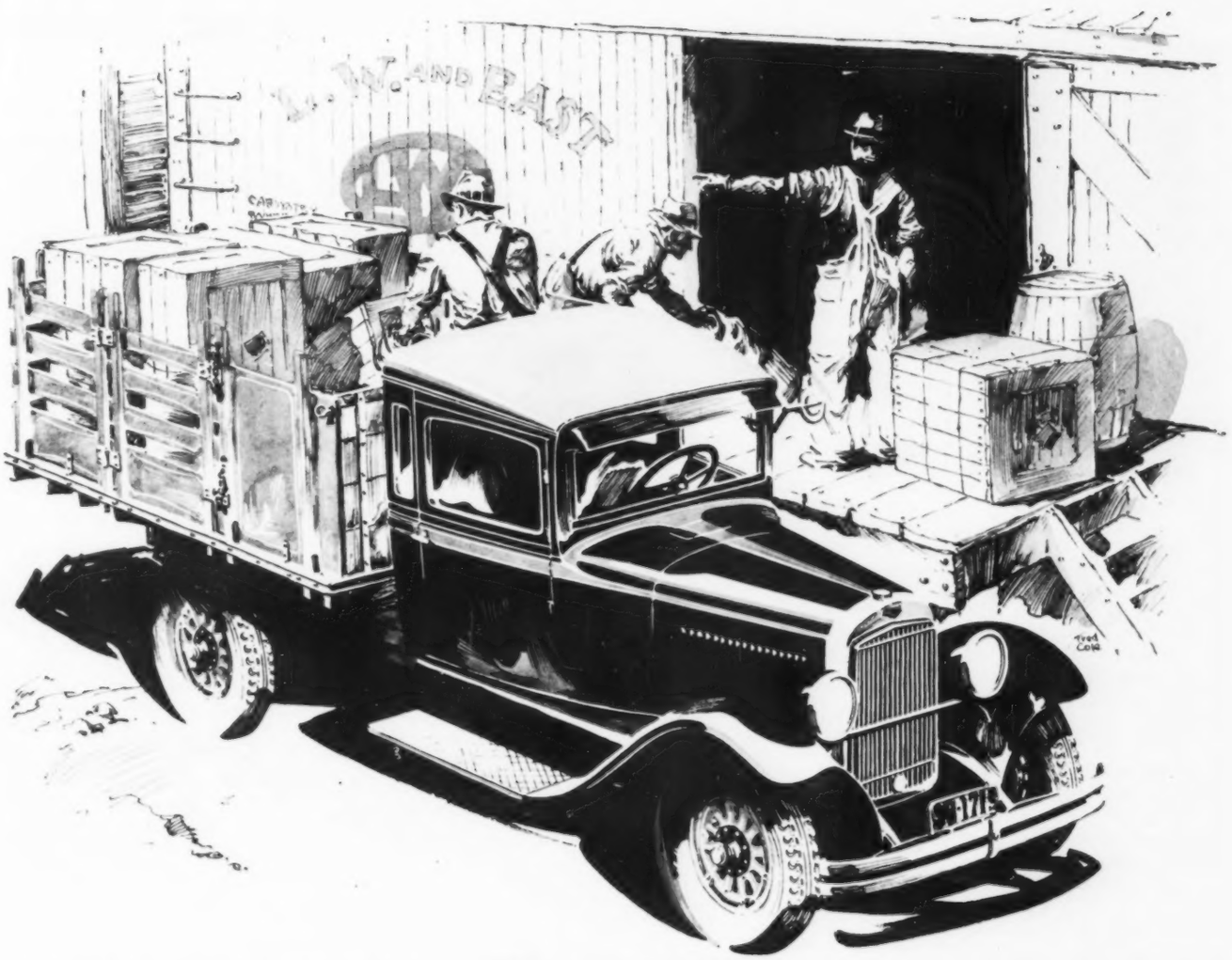
tion of the fortune was laid in 1863 when Ernest Solvay and Alfred Solvay worked out the Solvay process. Not to be technical, the Solvay process is a method of manufacturing soda ash from salt, ammonia, and limestone and is far superior to the Le Blanc process previously used. As soda ash and the caustic soda, which is made from it, are basic chemicals in many industries (especially glass and soap making) the Solvays rapidly spread their process throughout the world. One of their first associates in it was the Brunner, Mond & Company, Ltd. (now controlled by Imperial Chemical Industries) of England. In 1881, Mr. W. B. Cogswell, with the help of the ancient Rhode Island family of Hazzards, proceeded to form the American Solvay Process Co., and the European Solvays held therein approximately a half interest. When the Solvay Process Co. went into Allied, the family received in return a block of about 350,000 shares of Allied stock. Recently Brunner, Mond sold its block of 100,000 shares to the Solvay American Investment Co. at the low price of $220 a share. It may be noted in passing that the half interest in the Solvay Process Co., which in 1920 was worth (in Allied shares, at $40 a share) $14,000,000, after a decade of Allied management is now worth about $110,000,000. The Semet-Solvay Company, a later Solvay development (the Solvays were pioneers in the recovery of coal and coke by-products), came into the Allied group along with its older brother. In addition to their holdings in Allied, the Solvay interests were long represented by the late Armand Solvay, who was an Allied director, in much the same manner that Ernest Solvay II is a director in Imperial Chemical Industries. Another active member of the contemporary Solvay group is said to be Baron Jannssen, who is a Solvay only by marriage. It is impossible to say how much either of the native Solvay companies make, because, like Allied, they do not wear their hearts upon their sleeves and also because, as limited liability companies, they need divulge hardly anything about their operations. Because of their extensive French, German, and British affiliations the Solvays occupy a key position in any movement toward a general European chemical cartel, a position which they strengthened in 1927 by promoting the formation of the Union Chimique Belge, an association of Belgian chemical companies, dominated by the Solvay influence. It should be pointed out that Allied and the Solvays are in no sense subsidiaries of each other and that while they are affiliates across the sea, each moves its own way in its own sphere of influence.

These, then, were the major figures of the 1920 deal—Dr. Nichols, the Solvays, the Hazzards, and Mr. Weber himself. But it is impossible to conclude a tour of the Allied gallery without a glance at a man who is no director, no officer of Allied, who is yet a large stockholder, who has been Mr. Weber's close friend for fifteen years, who is popularly and mistakenly considered a potent force in Allied councils today. This is Mr. Eugene Meyer.

Man Who Looked Around

In 1916, Mr. Weber found himself active vice president of Maxwell Motors, and among Maxwell directors at that time was Mr. Eugene Meyer. It was doubtless through his association with Mr. Meyer that Mr. Weber left a somewhat stricken automotive field (the Maxwell disappeared in 1925 with the Chrysler rising from its ashes) and went into chemicals and dyes. In 1917 (War year), the National Aniline & Chemical Co. was organized to manufacture dyestuffs, Mr. Meyer was financially interested, and Mr. Weber became its president, and when in 1920 National Aniline went into the merger that produced Allied Chemical & Dye (of which Mr. Meyer is a large individual stockholder), Mr. Weber exchanged the presidency of National Aniline for the presidency of Allied, an office which he occupies today. The shift from motors to chemicals appears to have been the turning point in Mr. Weber's career, and about the same time Mr. Meyer's life underwent a change, for he removed to Washington, became Chief of the War Finance Corp., and renounced active business.

Mr. Meyer is perhaps best described as an investor, and as such he is a model of his kind. Many years ago, when statisticians were less numerous and corporations less analyzed than they are today, Mr. Meyer conducted one of the first thorough investment researches



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Thousands of speedometers prove that Dodge Trucks have long, active lives. High speedometer readings therefore prove that owners find these workers economical.

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DODGE TRUCKS

GOOD NIGHT

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Good night

When are *you* coming? Last year nearly half a million of you came to stay a night and rest and *sleep*. Still, we aren't satisfied. We'd like to have *you*—soon as you can come. Room rates are low, or usual, to suit your need or whim, though most of them are priced at 3 or 4 dollars a day. So, if you've a visit to Detroit acoming, "come on over to our house." You'll find famous, interesting, smart and successful folk here, *at home*. You'll find your room pleasant and comfortable, and—at night when you've piled under the covers, you'll hear little winds cool and clean and sweet play 'round your windows, a harper's lullaby—and you'll snuggle down and fall *asleep* in the softest and *sleepiest* beds in all the world. Come when you can. We'd like to have you. See you soon. *Good night.*

The Book-Cadillac Hotel

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CARL M. SNYDER — MANAGING DIRECTOR

Allied Chemical & Dye

[*Continued from page 132*]

into the U. S. Steel Corp., reached the (extremely sound) conclusion that U. S. Steel was an excellent purchase, and became bullish on Steel ten years before the World War had offered a general demonstration of the wisdom of his course. Tips, hunches, and "inside" information are never allowed to influence his decision. Mr. Meyer entered the commercial world with the advantage of having money (he is a member of a wealthy French family whose sons are likely to become either rabbis or bankers) and has undoubtedly many times multiplied his initial stake. Asked how one made money, he said: "Oh, you just go to New York and take an interest in things," and asked how one knew what things to take an interest in he answered, "Oh, you just look around." Which, if not very convincing, is at least as good as the story about saving one's pennies and working early and late.

Possibly Mr. Meyer's vagueness concerning the road to riches results from his being as much interested in politics as in finance. He was a leading candidate both for the chairmanship of the Federal Farm Board (awarded to Alexander Legge) and for the position of Ambassador to Germany (awarded to Frederic Moseley Sackett), and his unusual balance of brilliance with sanity would have resulted in his adding distinction to either office. During the War, however, as head of the War Finance Corporation, he loaned to farmers some $600,000,000 of government money and got it all back again. Since farmers then (as now) were inclined to visualize Washington as a fairy godmother, they considered Mr. Meyer's insistence upon collecting his advances extremely ungracious, and also resented his unwillingness to lend money to farm organizations which offered no security. He therefore became unpopular in many portions of the farm belt, and his availability was further lessened by his being a Jew, a New Yorker, and a financier.

Mr. Meyer lives in Washington on Meridian Hill, near Sixteenth Street (which is the haunt of the Embassies), in a huge house overlooking the city—a house with a lordly gateway, a sweep of drive, and large formal rooms furnished with some Chinese things (Mrs. Meyer is an authority on Chinese art), some formal salon type things, and some comfortable American things, but all things in excellent taste and accord. The Meyers are the only people in Washington (since the comparative social retirement of the McLean family) who entertain in the grand manner, with a flair. Most Washington dances assemble nothing more ambitious than a five-piece band, a hundred people, scrambled eggs and coffee. The Meyers entertain guests with English singers, Russian singers, Libby Holman of the *Little Show*, and many a dancer.

PICKANDS, MATHER & CO.

A note on the figures printed on page 69

It developed when taking subsequent depositions that Pickands, Mather's actual *compensation* was somewhat less than 1 per cent of the gross sum quoted by Mr. Eaton. Pickands, Mather testified that its total compensation from Sheet & Tube in 1929 was $165,948.75.

CHANGES *of* ADDRESS

Notice of a change of address, to be effective with the July issue of FORTUNE, must reach the Subscription Department prior to June 10th.

The Post Office does not forward magazines, including FORTUNE, which are mailed under the Second Class Rate of Postage.

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This Fascinating Game Called Business

IF there is one inspiring element, more noticeable than another in present-day Business, which lifts it to a more human plane, it is the element of Sport! Not sport as a recreation, diversion or pastime, but sport as a Game. The human game of building men and things to the *service* of man.

Ask any successful business man the game he likes best. Invariably the answer is "My Business." He is *playing the Game*. No little white ball holds his eye so intently; no gun or rod, blue water or trackless sky, call to him so deeply, mentally or physically. The records he breaks are those set by his Budget:—Costs, Sales, Inventory, Turnover. His medals—profits and the knowledge he has played the game *well*.

It's a Great *Game*—Business! Some weaken, but The Game goes on. Modern Accountancy equips this Business Game, holds the stop-watch of accomplishment and sets the goal ever higher.

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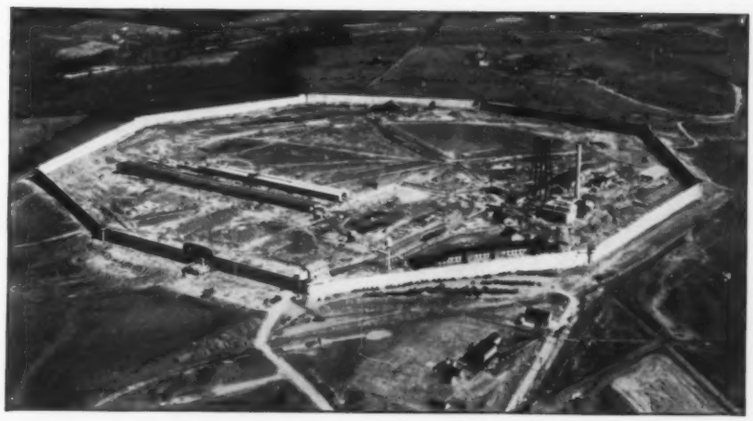

EASTERN STATE PENITENTIARY
Graterford, Pa.
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Construction Work for *Institutions*

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Martin Maloney Memorial Clinic
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A message to architects, trustees and officials of Schools, Colleges, Hospitals, Penitentiaries

OUR general construction activities include institutional work of almost every character—hospitals, clinic buildings, nurses' homes, dormitories, recitation halls, penitentiaries, power plants—all built in close cooperation with the architect.

Under our form of contract the work is done quickly and at low cost, workmanship of high quality is assured and the interests of trustees and officials are safeguarded.

Among the institutions and governments which we have served as builders or consulting engineers have been the following:

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Medical Arts Building, New York
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Protestant Episcopal Hospital, Philadelphia
Rockefeller Foundation, Nurses' School, Rio de Janeiro
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Trinity Church, Newport, R. I.
United States Government, Embassy, Rio de Janeiro
United States Government, Consulate, Seville, Spain
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MAXIMUM RETURN TO CLIENTS PER DOLLAR INVESTED

XUM

The cigarette that puts a spark of pleasure in every passing moment.

Camel

© 1930, R. J. Reynolds Tobacco Company, Winston-Salem, N. C.

The Month's News

Focused attention upon these faces, these facts, these events, and these places.

International

THE Kentucky Derby is a horseshoe magnet which attracts every year to Churchill Downs an imposing array of the aristocracy, social and industrial, of the country. At such a gathering one may see Marshall Field or John Hertz, Ogden Mills or one of the Fisher brothers, Benjamin Block or H. P. Whitney. William du Pont might be there (for he has recently taken to owning horses) as might Mrs. John J. Raskob, whose interest in racing is greater than her husband's. Last year among those who got rain-soaked at the Derby were Publishers Ralph Pulitzer and Joseph Medill Patterson, Editor Herbert Bayard Swope, Financier John J. Raskob, Realtor Walter J. Salmon, and Mrs. Graham Fair Vanderbilt. This year there was a most distinguished spectator sitting in the box of Joseph E. Widener. He appears above, surrounded by Bobbies, in his Hour of Triumph. In 1918 Edward George Villiers Stanley, seventeenth Earl of Derby, announced two life ambitions: one was to become Prime Minister, the other to win the Epsom Derby. His horse, *Sansovino*, accomplished the latter for him in 1924, and our picture shows him on his way to lead *Sansovino* into the paddock. It was the first time since 1787 that a Derby had won a Derby . . . Of the 149 thoroughbreds that were entered in this year's Kentucky Derby, certain bore the colors of men as potent in business as in racing. William Woodward, president of the Hanover National Bank, led the list with no less than seven entries. Not far behind, with five entries, was Harry Sinclair's Rancocas Stables. The Three D's Stock Farm of W. T. Waggoner, blind Texas oil man, had three entries, and E. R. Bradley, proprietor of the famed Beach Club at Palm Beach (known generally as "Bradley's"), had two: *Breezing Thru* and *Buckeye Poet*. The names are significant: all Bradley horses are given names beginning with "B," as his *Behave Yourself*, the Derby winner in 1921, and his *Blue Larkspur*, the unsuccessful favorite last year. And there was the colorful Baron Long, California promoter and resort owner, with two entries. One of the owners of Agua Caliente, the sporting colony de luxe near Tia Juana, Mr. Long projects a $1,500,000 race track there. William Ziegler, Jr., head of Royal Baking Powder, entered *Gone Away* and *Spinach*, and Patrick H. Joyce, the Chicago railroad man who recently got control of the Chicago Great Western, was represented by his *Dick O'Hara*. Walter J. Salmon (the Salmon Tower) had three entrants. The roll call, by no means complete, of Business in Horseflesh as represented at this year's Derby may be closed with Edward B. McLean, publisher of the Washington *Post*, who entered his *Crossbones*.

XUM

Faces & Facts

International
SENATOR CLARENCE DILL

RADIO Corporation of America proposed, last month, to purchase from General Electric and Westinghouse their radio manufacturing facilities and patents. Almost simultaneously with the public announcement of this proposal, Clarence C. Dill, Democratic Senator from Washington and at one time said to be the only man in the Senate who could take a radio set apart and put it together again, made a loud and bitter attack upon the parties to the bargain. Said he, "A new radio trust has been formed. I hope the Department of Justice will take notice . . . This merger would give General Electric the same control over radio that it already has over the power trust." On the following day, the deft Senator Dill was able to link the new radio set-up with the International Bank through G.E.'s chairman, Owen D. Young.

The details of the proposal include the issuance of 7,500,000 new shares of common—a number equivalent to the present authorized total. This new stock would be distributed between G.E. and Westinghouse, who are already stockholders in R. C. A. Reasons for the purchase were given as follows:

In 1919 a great many radio patents had been issued to G.E., to Westinghouse, to A. T. & T., and to others. So scattered were these patent holdings that no single company could manufacture complete sending and receiving equipment without infringing on the rights of others. G.E. acquired the Marconi company, and then in cooperation with Westinghouse created R. C. A. as a selling agency for radio equipment, using the devices jointly controlled by them. R. C. A. has been buying parts on a cost plus basis, selling parts or franchises to other manufacturers and sets to the public. In 1919 this set-up was not unsatisfactory because the industry was small, its potentialities unimagined. Now the industry, competition, and potentialities have grown so enormously that R. C. A. has begun to feel cabined in its limited capacity as selling agent and G.E. and Westinghouse believe that concentration of radio manufacturing and research interests is wise and likely to be more profitable than the set-up of the past decade. By this proposal, the interest which General Electric and Westinghouse have held in R. C. A. since its formation will change to an actual control of a majority of its stock.

. . .

WHEN a government needs money and has at its disposal a match monopoly, a bargain can usually be struck with Kreuger & Toll, parent company of Swedish Match and International Match. Many a nation has discovered this in the past few years. And among the first of them was France, in November, 1927.

At that time, French credit was shaky, and a large issue of 8 per cent government bonds was outstanding. To retire these bonds, France sought a money-lender. But no money-lender could be found who would do business at commercial rates. Kreuger & Toll volunteered to buy $75,000,000 worth of twenty-year 5 per cent bonds at 93½ if the Republic would give in exchange a twenty-year match monopoly. Swedish Match took $25,000,000. International Match, its American subsidiary, took $50,000,000 worth, which it financed by means of a debenture issue sold through Lee, Higginson & Co. at 98½. France got the money and retired its 8 per cent bonds; Kreuger and Toll got the concession.

Now, France is back on her feet. The Chamber of Deputies has ratified an agreement with Kreuger & Toll to retire the issue on June 30, at 103½, plus interest.

France's gain by early retirement: approximately $60,000,000 (interest for 17½ years, minus $7,500,000 premium paid to Kreuger & Toll). Kreuger & Toll's gain by the entire transaction: (1) twenty-year monopoly, (2) refund of their original $70,000,000 investment, (3) the $7,500,000 premium.

Similar loans have been made to Poland, Greece, Hungary, Rumania, Germany . . .

International
THE LADY

SAN FRANCISCO was lately thrilled by the dazzling conjunction of a lady and a tower. The latter was the Royal Dutch Shell's new $4,000,000 building, whose twenty-nine stories are lighted up at night by what is called the most brilliant array of floodlights (360 of them) on the Pacific Coast. The lady was Lady Deterding, once an *émigré* from revolutionary Russia, now the wife of the potent head of Shell Oil. Properly smiling and be-orchided, she raised the flag that officially announced the completion of the tower.

International
THE TOWER

International
PRESIDENT CHANDLER

OF THE various shifts in executive personnel that went on during the month, these were most worthy of notice: the once-dilapidated, now flourishing Boston & Maine Railroad got a new president: Edward S. French. An experienced operating executive, he succeeds Thomas Nelson Perkins, who becomes board chairman . . . To the board of Niagara Hudson Power comes a notable addition: Landon K. Thorne, president of both Bonbright & Co. and American Superpower . . . Sir Percy Bates succeeded Sir Thomas Royden as chairman of the Cunard Line . . . Sikorsky Aviation elected a new chairman, A. C. Dickinson, succeeding Frederick B. Rentschler, and a new president, E. E. Wilson, succeeding Mr. Dickinson . . . Samuel Sloan, senior vice president of City Bank Farmers Trust, retired to resume his position on the board of National City . . . To Harry Chandler, publisher of the Los Angeles *Times* and eminent citizen of California, came a high and well-deserved honor: the 1930 presidency of the American Newspaper Publishers' Association . . . Republic Steel Corp. filled the vacancy caused by the death of its president, Elmer T. McCleary, by electing Chairman Tom M. Girdler president as well.

PRESIDENT FRENCH

International

ROY OF HAITI

AMERICAN men of business were well pleased at the outcome of recent presidential elections in Haiti and Colombia. Both countries have chosen presidents who are stable, progressive, and friendly to the United States.

Eugene Roy, a leading broker of Port-au-Prince and one-time president of the Government Clearing House, is Haiti's choice. When President Hoover's Commission left Haiti, they arranged for a regular Congress to be elected (the last one was dissolved by American marines in 1917) and for the Council of State to elect a provisional president for the interim. This important post has fallen to M. Roy, who seems to be equally respected by all parties. No politician, he has refused the Ministry of Finance five times, quietly keeping to his brokerage business through every political storm. His integrity and ability will do much to smooth out the workings of the Hoover Plan drawn up by W. Cameron Forbes [see FORTUNE, April, 1930] and his Commission . . .

Colombia's new president, Dr. Enrique Olaya Herrera, is noted alike for his progressiveness (he conducted a whirlwind campaign for the presidency, covering territory by airplane in six weeks that would have taken him three months by other means of travel) and for his American sympathies (for the last eight years he has been his country's Minister at Washington).

Since his election he has been traveling in the United States. "As long as I am President," he recently told a group of business leaders in New York, "I assure all foreign capital, and particularly American capital, fair treatment." That such words are not idle gestures was indicated by James S. Carson, of Electric Bond & Share Corp., who at the same luncheon accurately characterized Dr. Olaya as the first liberal to be elected President of Colombia in fifty years.

SAMUEL INSULL has been presented with a bill for $64,-119.42, the cost of losing his petition to the Public Service Commission of Indiana for permission to combine gas, water, electric power, heat, ice, bus, street railway, and interurban units serving 271 cities and towns in 38 counties of Indiana. A further bill for $35.16 was rendered as the cost of publication of the legal notices.

These costs were incurred by the commission in investigations over a period of fifteen months. The investigations resulted in disagreement between the commissioners upon the question of jurisdiction in the case (two of the five maintaining that the commission did not have it) and complete accord in the opinion that the merger, a $70,000,-000 deal, should not be permitted. The reasons for rejection of the petition were ". . . that the earnings of the merged property will not adequately provide for operating expenses . . . that the proposed merger is not in the public interest."

Simultaneously with the announcement of denial of the petition, two insolvency suits were filed by Westinghouse Electric and Manufacturing Co. against the Terre Haute Indianapolis & Eastern Traction Co. and the Indianapolis Street Railway Co. Because of Westinghouse-Insull friendship, this was considered as an Insull move and potentially a strong one toward eventual Insull victory in the fight over the project, already of five years duration.

• • •

Rumors to the effect that the new United Light & Power combine would surrender a controlling interest to Commonwealth & Southern were vigorously denied.

• • •

The day when New York City will begin to draw electric power from Niagara Falls generators seemed to be advanced last month by the announcement of acquisition of substantial interest in Consolidated Gas (which controls N. Y. Edison) by the Morgan-Bonbright holding company, the United Corporation.

Wide World

HERRERA OF COLOMBIA

International

MR. SAMUEL INSULL

• • •

Organization of the Hellenic Company of Greece, the first public utility holding company in Greece, has been undertaken by the European Electric Corporation in conjunction with some of the largest banks in Greece. The new company will have an interest in the electric light and power properties serving Athens, which has a population today in excess of 600,000. European Electric has large utility holdings throughout the Continent.

• • •

Harris, Forbes-American Founder's Public Utility Holding Corporation of America has acquired controlling interest in the South American Railways Company. South American Railways is a Delaware corporation formed to finance and eventually to acquire substantial interest in the Buenos Aires Central Railroad and Terminal Co., which owns a 200-mile steam railroad, the Lacroze Tramways Co., and the Buenos Aires Lacroze Light and Power. It also has under construction a new terminal in the heart of Buenos Aires and new underground trackage which will lead to it.

• • •

Negotiations now under way between U. G. I. and Public Service Corp. of New Jersey are designed to create the largest electric lighting and gas combination in the world (total assets more than $1,-436,000,000). Three common shares of U. G. I. for one of Public Service of New Jersey is the basis upon which details of the deal are being worked out. Upon informal advice of the progress of negotiations, shares in both units became active and showed gains upon the Big Board.

THE freedom of the city of Manchester, England, has been conferred on one of her most distinguished citizens: Charles Prestwich Scott. Mr. Scott is the creator and guiding spirit of the revered, authoritative Manchester *Guardian*. He resigned as editor a year ago, after fifty-seven years in the post. But he still controls the *Guardian's* policies (through his son, quiet,

Keystone

CHARLES PRESTWICH SCOTT

Oxford-educated E. T. Scott, who is now editor) and the *Guardian* management (through his ownership of a majority of the capital stock). His eighty-two years weigh lightly on him. "I could still sack the lot of them!" he gloated when he retired. And to the Lord Mayor and the dignitaries of Manchester who met to do him honor, he suggested that it might be a good thing if Parliament met in Manchester for a while instead of London—in order, he explained, to get a broader viewpoint.

• • •

ON APRIL 26 appeared the first issue of a publication of interest first of all to Wall Street, but of considerable interest in these days to Main Street as well—the *New York Stock Exchange Bulletin*. Its twelve pages contained tables and graphs which outlined the course of securities during the last five years and evaluated them in general terms.

E. H. H. Simmons, retiring president of the New York Stock Exchange, contributed a signed statement of policy, explaining that the *Bulletin* would contain much information which had been issued to the press, but that some figures and charts would show the modification and correction that naturally come from monthly recapitulation.

XUM

Corporation Earnings

And comments thereon.

QUARTERLY reports of corporate earnings ordinarily come straggling in long after the close of the period they cover, especially when the reports are regrettable. As far as could be judged from fragmentary returns, however, American industry, during the first quarter of 1930, made profits of between 15 per cent and 20 per cent less than during the first quarter of 1929. The most extensive survey (issued by the National City Bank) covered 200 corporations and reached an average decline of 19 per cent. This survey excluded railroads (few of which had reported) and public utilities. This latter group, what with the stabilizing influence of American Telephone & Telegraph and the apparent ability of the light and power (as distinct from the traction and communication [aside from A. T. & T.]) companies, will probably serve to lessen the general average loss.

Automobile and automobile accessory companies were greatest first quarter losers, thirty-four companies showing a decline of more than 40 per cent. General Motors (world's champion earner) shrank from a 1929 total of $61,910,000 to a 1930 total of $44,968,000; Hudson profits dwindled by about one-half and Packard by about two-thirds. Motor profits declined for the eminently simple and sufficient reason that people were not buying automobiles, General Motors sales to dealers dropping off nearly 30 per cent. The automobile decline, of course, affected the even more basic steel industry, eighteen iron and steel companies falling off about 16 per cent. Bethlehem showed a small increase but U. S. Steel declined from $42,185,000 to $35,777,000. A dull period in textiles, motors, and coal mining and a cut in alcohol prices dropped the profits of twelve chemical companies about 20 per cent. Oil companies (not much concerned in the 1929 boom) held their losses to a 4 per cent decrease.

Of industries running counter to the general trend, the most conspicuous were the entertainment and advertising businesses. Whether people went to the theatres (notably the cinema theatres) to forget their troubles or whether economy manifested itself through the more major luxuries such as automobiles, entertainment companies reported large increases, Paramount showing a 1930 quarter of $4,800,000 against a 1929 quarter of $2,565,000. The advertising increase resulted partly from a deliberate attempt to preserve the general industrial morale, many a manufacturer maintaining or increasing his advertising appropriation to demonstrate that he was not down-hearted. Incidentally, brisk advertising business is shown not in the reports from advertising agencies, which are nearly all closed corporations with no Exchange listings, but in the earnings of printers and publishers. Thus chief evidence of advertising well being was seen in the Curtis Publishing quarter of $6,533,000 against $5,752,000 in 1929. The most basic industry among those prospering through the early months was the light and power business. Commonwealth Edison held its own around the $5,000,000 mark and Commonwealth & Southern was about stationary around $19,000,000. General Electric was off about $500,000 and Westinghouse about $1,000,000. The 200 companies considered by National City made $293,330,000 in the first 1930 quarter against about $362,000,000 in the first 1929 quarter, a decline of $69,000,000, about 19 per cent.

It should of course be remembered (and it is constantly becoming more obvious) that 1929 was very much a record and not at all a normal period, so that comparisons with it, although inevitable, are certain to be invidious. It is likely enough, for example, that when 1930 has completed its allotted twelve months it will have been no year of disaster and calamity, although it can hardly hope to approach the records of its brilliant predecessor. It may be, judging from the apparent extent of unemployment, that many a smaller corporation whose earnings at best are never a matter of statistical concern has seen the 1930 profit shrinkage result in a wide gap between ends that should be made to meet. But the larger and more listed companies whose statements are ordinarily considered industrial barometers show rather a decline in a profit than an approach to a loss.

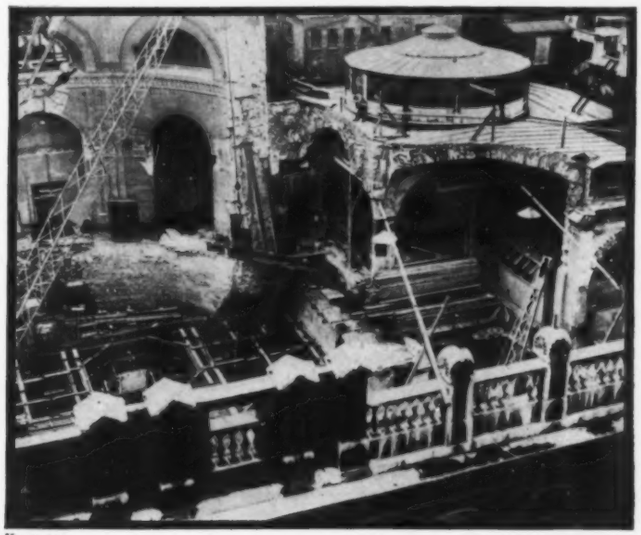
FIRST QUARTER EARNINGS OF SIXTY MAJOR COMPANIES

	1929	1930
Allis-Chalmers Mfg. Co.	1,013,375	1,170,937
American Telephone & Telegraph	40,500,765	40,439,855
Atchison, Topeka & Santa Fe Railway	12,250,175	4,884,856
Atlantic Coast Line Railroad	6,149,800	4,300,439
Atlantic Refining Co.	3,892,600	1,124,300
Baltimore & Ohio Railroad	9,221,571	6,805,218
Bethlehem Steel	9,045,590	10,077,486
Boston & Maine Railroad	1,331,081	1,178,552
Brazilian Traction, Light & Power	6,584,554	6,657,946
Canadian Pacific	7,643,579	3,685,847
Caterpillar Tractor Company	2,197,495	3,365,832
Chesapeake & Ohio Railway Co.	6,819,046	6,618.251
Chicago & North Western Railway	3,030,383	2,258,229
Chicago, Rock Island & Pacific	1,884,162	293,756
Commonwealth Edison Co.	4,941,782	5,120,866
Corn Products Refining	3,435,404	3,152,343
Curtis Publishing Co.	5,752,491	6,533,142
Delaware, Lackawanna & Western	3,335,100	2,023,779
Electric Auto-Lite	3,399,084	1,930,504
Erie Railroad	2,142,839	313,872
Fox Film	3,090,470	4,604,684
General American Tank Car Corp.	1,012,550	1,703,917
General Electric Co.	14,505,986	15,042,522
General Foods Corp	5,186,384	5,990,764
General Motors Corp.	61,910,987	44,968,587
Gillette Safety Razor Co.	4,531,218	2,164,348
Great Northern Railway Co.	3,554,168	538,325
Hershey Chocolate Corp.	2,265,140	2,320,818
Hudson Motor Car Co.	4,531,218	2,164,348
Illinois Central	7,298,581	5,357,191
Inland Steel Co.	3,007,242	4,098,424
Kresge (S. S.) Co.	3,177,981	2,759,000
Lambert Co.	2,325,641	2,068,267
Missouri Pacific	2,231,689	1,531,349
National Biscuit Company	4,709,455	4,665,616
New York Central Railroad	22,646,197	14,446,110
New York, New Haven & Hartford	3,224,381	3,106,614
Norfolk & Western Railway Co.	7,874,120	7,303,964
Northern Pacific Railway Co.	3,365,679	1,126,856
Pennsylvania Railroad	27,521,482	19,406,721
Radio Keith Orpheum	384,749	1,607,622
Reading Co.	4,003,560	2,831,839
Seaboard Air Line Railway	3,011,153	2,361,233
Southern California Edison	3,905,921	4,085,186
Southern Pacific Co.	11,474,544	7,130,739
Southern Railway Co.	6,237,598	3,735,789
Stewart Warner	2,054,224	656,011
Tide Water Assoc. Oil	1,613,071	2,165,388
Timken Roller Bearing Company	4,264,225	3,106,659
Union Carbide	7,203,945	6,472,783
Union Pacific Railroad Co.	9,126,050	5,154,605
United States Steel	42,185,447	35,777,307
Western Union Telegraph Co.	3,714,360	1,486,803
Westinghouse Air Brake.	1,924,893	2,187,450
Westinghouse Electric & Mfg. Co.	5,631,700	4,546,613
Willys Overland Co.	2,028,020	136,443
Youngstown Sheet & Tube	4,430,316	2,516,706
Du Pont de Nemours, E. I.	25,239,845	17,347,626

The Bank of England Changes in Body and in Soul

Underwood & Underwood

BEHIND THIS PLACID FACADE . . .

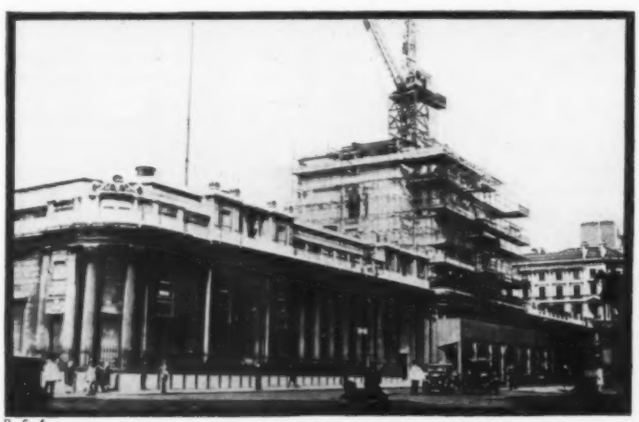


Keystone

. . . THIS IS GOING ON

THE Old Lady of Threadneedle Street is having things done to her interior. As Londoners pass by the Bank of England, they see the same chaste, classical façade (the top of which looms in the foreground of our picture) they and their fathers have always known. There is nothing to indicate that behind the Old Lady's placid visage all is chaos and confusion. Faced with the necessity for expansion, the British, characteristically conservative, are keeping the Bank's traditional façade intact, erecting within it a high central structure. And with characteristic thoroughness, they are making the Bank into an impregnable money fortress, with eight-ton doors and deep-buried vaults that can be flooded with water by pressing a button miles from London. Bombs, even high explosive shells, will have small chance of breaking into the Old Lady when the $25,000,000 rebuilding is completed in 1935 . . . Spiritually as well as physically the Old Lady is changing. Montagu Collet Norman was recently reëlected governor of the Bank of England. It was the tenth time he has broken one tradition: that the governor shall not be reëlected. It was the eleventh time he had defied another: that no banker shall be elected governor. Merchants, ironmaster, shipowners, but never bankers, were long considered fit for the highest banking post in England. Sophisticated, able Mr. Norman's flair for American financial relations has been a large factor in his tradition-shattering success . . . This summer Dr. O. M. W. Sprague, professor of banking and finance of Harvard, takes up his duties as economic advisor to the Bank of England. His function is largely to strengthen the ties between the Bank of England and the Federal Reserve System. Though certain British newspapers waxed indignant over the appointment of an American to this post [FORTUNE, March, 1930], the fact is that the policy is two years old and Dr. Sprague merely succeeds another American, W. W. Stewart. Between American-minded Governor Norman and American-born Dr. Sprague, however, the Old Lady is somewhat justified in feeling that her soul as well as her body is suffering a change.

Keystone



P. & A.

AS THE NEW STRUCTURE LOOKS NOW

Keystone

AS IT WILL LOOK BY 1933. ABOVE: NEW DOORS

XUM

Wide World
SIR HENRY THORNTON

SIR HENRY THORNTON, the shrewd, highly successful, and capable American who runs the Canadian National Railways, talked over the telephone not long ago. This simple act was chronicled in newspaper headlines, not because Secretary of Commerce Lamont was at the other end of the line (though he was), but because Sir Henry was traveling over his railroad at about sixty miles per hour while he talked. The device, product of a Canadian National engineer, is being installed on the *International Limited* and the *Maple Leaf* on their Toronto-Montreal runs.

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ON THE afternoon of April 23 there was a heavy snowstorm in the vicinity of the small town of Attica, New York. A section gang at work on the Attica & Arcade Railroad heard an airplane drone over their heads, heading eastward. A few minutes later they heard it again, much lower, going back in the opposite direction. Suddenly they heard a great crash . . . The designer of the Packard Diesel engine for aircraft, Captain L. M. Woolson, had been killed. And in a plane powered by his own motor. The crash, however, was caused entirely by weather conditions, the ship running into a hill in the blinding snowstorm. When the laborers rushed to the spot, they found Captain Woolson and his two companions crushed to death and the plane completely wrecked—but they found no fire. The elimination of the fire hazard (see page 127) is a feature of the Packard Diesel engine.

ON JUNE 9, the 500,000 shareholders of A. T. & T. will be issued warrants to buy one new share of stock at $100 for each six shares which they now hold. A. T. & T. common was selling at the time of the announcement of the melon for about $260. Rights, therefore, sold on a "when issued" basis at about $24; the total of the melon was about $300,000,000 if computed on the outstanding common only. If holders of convertible debentures issued in 1929 exercise their stock options by May 23, the value will be increased by many millions.

The purpose of the new issue is to provide additional funds for expansion of the world's largest public utility unit. Additions and repairs cost A. T. & T. approximately $1,000,000 a day. The $224,000,000 which the new issue will bring in will be devoted to such construction, particularly for the development in the current year of the company's long-line department. (Installation of 3,000 miles of cable, 1,000,000 loading coils, and 28,000 telephone repeaters are included in the announced program.)

• • •

TEXTILES, in the South as in New England, have been sickly of late, and none knows it better than the Hon. O. Max Gardner, Governor of North Carolina (right), who made a fortune in the business (see page 71). Last month he summoned the governors and representative business men of six other southern states and organized the Southeastern Economic Conference. Its principal object will be general regional cooperation in business, industrial, and agricultural problems.

Cameragrams
THE LATE CAPT. WOOLSON

Governor Gardner, no Hoovercrat, was elected on the Democratic ticket in 1928 by a majority of 72,000. Election day was also his wedding anniversary and this coincidence received greater publicity in the South than did the fact that he is the first Chief Executive of North Carolina able to play golf, which he does left-handed.

International
GOV. O. MAX GARDNER

• • •

BANKERS are the wet-nurses of industry. Arrogating to themselves more mature prerogatives, two of America's foremost bankers last month stood in the position of guide, philosopher, and friend and made the most important contributions of the month to the technique of business.

In a ponderous study titled *The Federal Reserve System*, Paul M. Warburg detailed its history and recommended changes in its constitution, tending to remove it from the reach of politics, to give it more power, and to make it more familiar with the financial affairs of the country.

Shortly after the appearance of Mr. Warburg's book, Bernard M. Baruch proposed to the Boston Chamber of Commerce the formation of a "Court of Business" which would stand in the same relation to business that the Supreme Court stands in relation to the nation. Under its direction business would not be controlled by "blind, inhibitory blankets" (such as the Sherman and Clayton acts) but by "a tribunal invested . . . with so much prestige and dignity that our greatest business leaders will be glad to divest themselves of all personal interest in business and there serve . . ."

Mr. Warburg's recommendations, applicable to a narrower field, seemed easier of realization than Mr. Baruch's which, however, were received hopefully.

WERNER JANSSEN

AN EMPLOYEE of the Guardian Trust Company, of Cleveland, has won the Prix de Rome in music. He is Werner Janssen, brilliant young composer of *New Year's Eve in New York*, and his victory means three years of study in the American Academy at Rome. Mr. Janssen does not romantically druge as a bank clerk all day and write symphonies at night in his hall bedroom. He conducts the Guardian Trust Orchestra, which broadcasts over WTAM both the potency of the Guardian Trust and the genius of Mr. Janssen. He is probably the only graduate of such 100 per cent American institutions as Phillips Exeter Academy and Dartmouth College who likes caviar and pink shirts (Deems Taylor too likes pink shirts). He dislikes bridge, the sound of cotton being torn asunder, and people who play consecutive ninths on the piano.

• • •

RIGHTS to use the hydrogenation process of oil refining [see FORTUNE, April, 1930] will soon be made available to the American oil industry. These rights are jointly owned by Standard Oil of New Jersey and the I. G. Farbenindustrie through a subsidiary, the Standard I. G. Co.

To handle the details of licensing, Hydro Patents Co. has been organized under the laws of Delaware. Licensees will be required to own stock in Hydro Patents and to take a license measured by the licensee's daily hydrogenation capacity. Another subsidiary, Hydro Engineering & Chemical, has been organized to supply licensees with catalysts which it will manufacture, and to function as designing and construction engineer for the new plant equipment which licensees will require.

Current Styles

Among business men, speculators, securities, markets, and optimists.

(The following article was contributed to FORTUNE *by Mr. Merryle Stanley Rukeyser.)*

LIKE other places where human beings dwell, the world of finance is perpetually subject to a parade of changing fashions. Financial greatness comes not so much from inventing fashions as from interpreting public tastes and acting in accordance with them. Somber investment banking houses, recognizing the fashion element in their business, cut their security patterns differently each year in accordance with shifting vogues.

Styles not only affect such technical matters as capital set-ups, but also the industrial channels into which capital readily flows. Last year, for example, straight, limited return bonds were almost unmarketable. The creators and fashioners of bonds had to make a concession to the prevailing speculative excitement by adding warrants or convertible features to bonds, which gave them some of the promise of growth which common stocks held out. In the first quarter of this year, however, old-fashioned bonds were again in favor, and were in fact the chief medium for wooing surplus dollars from their owners. The revival of interest in bonds was closely related to the impulses which resulted in a return flight of funds into the savings banks. A public that had been somewhat disillusioned during the panic, before which they bought prospects and popularity at a high price, turned their backs on the new appeals and began to worship again at the feet of the goddess of safety. The financial cycles have the same human basis as the shifting from short to long skirts.

Industries, too, rise and fall in investment popularity, frequently without any correlation to their actual business prospects. For example, before and after the panic, power and light securities were in especial favor. The public suddenly became dramatically aware of their rapid and consistent growth. In seven years, the kilowatt hour output doubled, and Matthew S. Sloan, president of the National Electric Light Association, predicts another 100 per cent growth in the next seven years. But this growth factor has been well known to informed observers for many years. The great boom in the stocks depended less on the underlying facts than on the sudden awakening of the general financial public to the facts. And the public, responding to its feelings, is perpetually in the process of overdoing things in the world of give and take. Accordingly, T. B. Macaulay, president of the sagaciously managed Sun Life Assurance Company, the largest owners of common stocks in American corporations, whose favorite outlet for funds is in power and light securities, recently remarked to me that he was growing slightly apprehensive lest the public liked them too well.

A year or more ago, there was a fashion for airplane stocks. Of late, even the best aviation stocks have been listless, reflecting the fact that temporarily they have been out of vogue. Stock prices accordingly reflect not only mechanical earnings ratios and monetary conditions, as the sedate economic textbook writers indicate, but also popular whims, fancies, and caprice. The speculator, who is always seeking capital appreciation, usually seeks to acquire the temporarily unpopular just on the threshold of a new spurt of popularity. The long term investor, who buys mainly for income, should seek out the meritorious and the unpopular, for in that department he can find bargains. Good railroad stocks have recently been reflecting their outmoded characteristics at the market place, which has been far more sensitive to temporary shrinkage in earnings of railroads than of fashionable industrial companies.

• • •

The fashion note pervades the blue sky, or fraudulent, financial world as well. The charlatans have their ears close to the ground and are always seeking to find out what the public wants. The fakers closely follow bona fide financial developments and create a fake counterpart for each new legitimate development. In the six months before the panic, fraudulent operators were frustrated to a large extent by the growing quasi-sophistication of the financial public, which became enamoured of the idea that the prudent thing to do was to buy the blue chip stocks, such as General Electric, U. S. Steel, Westinghouse Electric and Manufacturing, and other premier issues. The blue sky stocks suffered from the competition of blue chips. Then came the interlude of disillusionment, popularly known as the panic. Amateurs found it possible to get wiped out even though they had hitched their wagon to the stars of the security world.

Accordingly, since the panic, there has been a renaissance of blue sky operations. The charlatans have revived their operations and their hopes. They have been capitalizing the failure of the amateur to distinguish in his own mind between losses resulting from legitimate hazards and the losses resulting from fraud. Accordingly, Dr. Frederick A. Cook, who was released from federal prison at Leavenworth, Kansas, where he had served for oil frauds in Texas, in a recent talkie told the great invisible audience that like it he had suffered heavy financial losses. This writer recalls that when an inquiring investor asked him more than eight years ago whether to entrust his hard-earned cash to the learned explorer, he replied in effect: "I would rather buy city lots in the North Pole from Dr. Cook than the oil stocks which he is sponsoring."

A specific instance of the manner in which questionable operators sought to benefit from the huge speculative losses incurred in so-called good securities during the panic appeared in a circular sent out in behalf of an Oklahoma oil promotion. This enterprise called attention to the fact that doubtless the recipient's stock holdings had shrunken greatly in value, and it slyly indicated that the way to restore one's estate was to shift from miscellaneous seasoned stocks into the offering of the promoter.

• • •

Goldman Sachs's adventures in the creation of holding companies and investment trusts, which have caused so much comment, were doubtless stimulated by the decline of the commercial paper business, in which the firm had long specialized. Last year the commercial paper market became all but extinct. Under present conditions, with the marked decline in interest rates in the last six months, there has been a robust revival.

• • •

Professional low-brows of the business world have for months been sneering at the alleged Christian Science School of Economics. The allusion is doubtless to the sunshine conferences held at the White House by President Hoover with business executives during the critical November days, and the subsequent efforts of the resultant Business Survey Conference and other agencies to strike cheerful notes in their published comment. I am one of those who think that the engineer in the White House made a magnificent gesture to stem psychological panic and to demonstrate that the human will could be an effective contributing cause in shaping the course of the business cycle. The old-fashioned critics of the newer efforts to modify the cycle and to mitigate the recession phase are philosophically oriental fatalists who apparently believe that human beings are mere clay in the hands of fate, subject to uncontrollable economic forces which blindly shape their ends.

I do not agree with those who attempt to gild the lily. I think that an optimism which ignores statistics is plainly stupid. But critics of the hopeful school have been fallacious, too. They have overemphasized the significance of immediately visible adverse trade news, failing to allow for the fact that ahead of the recession phase of the cycle doubtless lies a period of reviving prosperity. As long as America continues to show long term growth in population and in wealth, depression must be regarded as only a step backward before three are taken forward.

Two irresistible forces assure the return of prosperity. First, the growth factor, which is technically called the secular trend, which reliable statisticians compute as 3½ per cent a year. The long term normal advance in this country is at the rate of 3½ per cent a year. That is why reasonably priced common stocks of well

XUM

managed companies in stable industries are attractive. The second factor is the tendency of consumption to go on without more than a 10 to 15 per cent dip even in periods of great depression. Accordingly, even though merchants temporarily stop reordering and the wheels of industry are retarded, consumption gradually reduces stocks on hand and creates the very conditions which inevitably bring a trade revival when it becomes necessary for dealers to replenish their stocks. Accordingly, the disposition of the hard-boiled school of economics to accept the black significance of economic indicators during a depression period without a sense of perspective is fundamentally more misleading than the old banking axiom that it pays to be a bull on America.

Incidentally, President Hoover's efforts to exert business leadership, which have resulted in a quickening of public works and an increase in public utility and railroad construction at a time when ordinary consumption was receding, is in line with the policy of the Committee on Recent Economic Changes, which functioned through the scientific National Bureau of Economic Research. Toward the end of the Coolidge-Mellon-Hoover period of prosperity, the Committee, on which leading business executives and economists were represented, outlined the new objective of business as follows: "To maintain the dynamic equilibrium of recent years is, indeed a problem of leadership which more and more demands deliberate public attention and control. Research and study, the orderly classification of knowledge, joined to increasing skill, well may make complete control of the economic system a possibility. The problems are many and difficult, but the degree of progress in recent years inspires us with high hopes."

• • •

Fate has lifted Gates W. McGarrah, one of the surviving silent men of Wall Street, into a post which will inevitably make him vocal. Mr. McGarrah, with sound, will be a new feature on the financial scene. As president of the new Bank for International Settlements, organized in Switzerland in accordance with the Young Plan, Mr. McGarrah will be in position to continue in organized form the new *rapprochement* among central banks which the late Benjamin Strong, as governor of the Federal Reserve Bank of New York, initiated informally and extralegally after the War.

Prior to 1914, international anarchy prevailed in banking. The effort to substitute human intelligence for historical accident in central bank policy was offset by the lack of a coördinated international policy. A maneuver in London could be completely nullified by a noncoöperative move in Paris or in Berlin. After the War, with New York the financial leader, Mr. Strong was eager to help the debtor countries return to the gold standard. Accordingly, he would meet occasionally with governors of important foreign central banks and secretly arrive at policies. That international coöperation constituted a new and significant civilizing force in world business, and the International Bank has become a logical medium for continuing this intangible effort to subject economic forces to human needs. For example, the threatened future gold shortage, which has brought Professor Irving Fisher, of Yale, almost to tears, can be bereft of danger as a result of a coöperative move to modify central banking policy.

Mr. McGarrah's bank in Switzerland is owned by the other central banks, and will doubtless prove not only a clearing house for reparation funds but also for ideas and policies. Secretary Stimson ordered the Federal Reserve Bank of New York to abstain from active participation, but Mr. McGarrah, who had been chairman of the Federal Reserve Bank of New York, has been picked to head the venture. To the hitherto silent Gates McGarrah, who was head of the Mechanics & Metals National Bank, since absorbed by the Chase National Bank, this *bon mot* is ascribed: "It is in time of trouble that your real leaders stand out. When financial troubles come you can always count on a large percentage of timidity and selfishness, and experience will teach you where to find it; it is then that men of courage are needed to stand up and be counted."

• • •

The American people are especially subject to hysteria, and what touches its hysteria becomes first page stuff. The recent centers of hysteria were parrot fever and the plight of the automobile industry. As a matter of fact, since the recession the automobile industry has become better managed than ever before in its history. It is now attuning production to consumer demand and has deliberately given up its earlier dangerous policy of jamming cars into the showrooms of dealers. Accordingly, in the first quarter of 1930, the slump, as compared with the abnormally active first quarter of 1929 when the slack in connection with interrupted Ford production was still being made up, was much smaller in sales than in production. Actual sales in units were about 84 per cent as large as in the previous year.

In interpreting the larger significance of the trend, Alfred P. Sloan Jr., superlatively able business man and president of the General Motors Corporation, told me: "I am convinced that when the present industrial situation becomes a matter of history it will be found that from the standpoint of all the factors entering into what I might call 'stability' that the automobile industry will have earned for itself a high rating, a position which it is entitled to have in view of the fact that it deals with one of the most essential of necessities, transportation, and has become the most important American industry, therefore, the most important contributor to American prosperity."

• • •

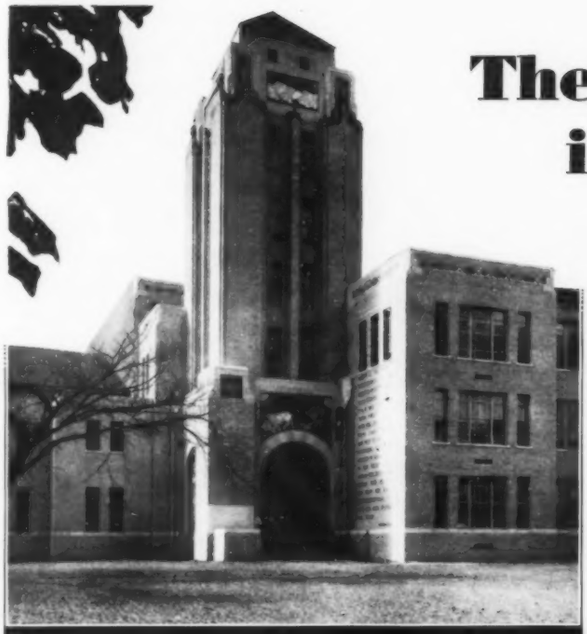
Another bugaboo has been challenged. It was commonly asserted that consumer financing through installment sales was unsound and would collapse in the first period of extensive unemployment. The country has just been through such a test for the first time since installment selling on its present vast scale had developed. Though it is too early to discuss the experiment with the finality of an historian, I have been favorably impressed with the confidential experience data made available to me by executives of the principal finance companies.

Henry Ittelson, president of the Commercial Investment Trust Corporation, the largest finance company engaged in a diversified installment business, in chatting with me on this subject, said: "Judging from present indications, I have no doubt that when the period of business recession is ended, the test will have proven highly satisfactory, and that installment selling will have proved itself beyond further question, basically sound.

"Our own experience to date is a testimonial to the honesty and integrity of the American people. Obligations have been met during the time of stress in a highly satisfactory manner. In fact our present portfolio shows very little variation from the normal amount of past due items . . . I believe that the test of the present unemployment situation will prove to be just as satisfactory as have those through which we have already passed in twenty-two years of our existence." M. S. R.

WORLD-WIDE deflation of commodities is no new thing to a world periodically heaving in the throes of business cycles, but new aspects have been present in the current decline. Most spectacular of all the breaks was that which dropped copper down 22 per cent after Copper Exporters, Inc., had bravely held it at eighteen cents for two days less than a year. Even at fourteen cents, buyers protestingly refused to purchase, and hinted that perhaps at twelve cents they would talk business. Then, with none of the cocksureness that had marked their previous move, Copper Exporters set the price at thirteen cents.

In agricultural commodities the results have been the same, and it indeed appears that the Federal Farm Board chose an inauspicious year to start the complicated mechanism of stabilization. Wheat has gone through an almost steady decline, with some options breaking the magic level of one dollar. Cotton has gone through a much more remarkable movement (see page 70), reflecting a most unusual policy on the part of the Farm Board, and one that has infuriated many members of the Cotton Exchange. While in Washington the government was denouncing manipulators and while the Senate was considering legislation against futures trading, the Board apparently engineered one of the most drastic squeezes seen for years on the cotton market. When cotton was below the Board's lending price of sixteen cents, it took over all the contracts for May and July deliveries that its coöperatives held and concentrated them in the hands of Harris & Vose. Then, instead of shifting to later months, it showed that delivery was expected. Merchants and mills who had gone short to hedge, individual speculators too, remembered the old refrain of the wheat pit, "He who sells what isn't his'n must pay the price or go to prison." The price was a premium of about three cents over later months, and at one point it would almost have paid to buy cotton in Liverpool and ship it back for delivery. While this move will probably recoup the enormous losses of the coöperatives, it has done much to embitter business men against the Board and little to please the farmers who plead for stabilization, not manipulation.



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Appendix

Note on the Navy

In spite of the very frequent and vocal attacks of certain well-organized groups on the Navy, there is reason to believe that the bulk of the people sense its great utility. After the Geneva conference of 1927, a program was proposed to lay down 25 new cruisers and 46 other combatant vessels. At that time a careful analysis of American press comment gave the following indication of sentiment pro and con the shipbuilding program:

	Circulation		Ratio
	For	*Against*	*For Against*
December, 1927	8,958,608	2,292,994	3.5 to 1
January, 1928	8,584,596	3,840,929	2.2 to 1
February, 1928	7,833,615	3,611,047	2.1 to 1
TOTAL	25,376,819	9,744,970	2.6 to 1

The drop from 3.5 to 1 in December to little more than 2 to 1 is attributed to the disaster of the submarine *S-4*, which introduced that emotional element which never fails to appear where any question of public policy is concerned. Probably as a result of the *S-4* disaster, the program was cut down to 15 new cruisers and one aircraft carrier. The press reaction on this program in March, 1928, was:

Circulation		Ratio
For	*Against*	*For Against*
9,205,971	1,573,344	5.8 to 1

In view of this it is interesting to note that the vote in the House was 287 to 58 in favor of the building program—in other words, about 5 to 1. The program was not acted on by the Senate until February of the following year, eleven months later. During that time the Senators had ample opportunity to appraise public sentiment. If the press support had been specious or forced, that period of time would surely have revealed its weakness. But during the months preceding senatorial action the press stood better than 6 to 1 for the bill. It was not surprising, therefore, that the Senate passed the bill by a vote of 68 to 12, or virtually 5 to 1. The foregoing seems to show that the public is alive to its changing economic position and to the need for an adequate Navy which this entails. The statesmen who have blocked such a Navy, on the other hand, seem to have been impressed by a minority which, however well organized, represents neither the true policy nor the true feelings of the country.

Note on Cotton

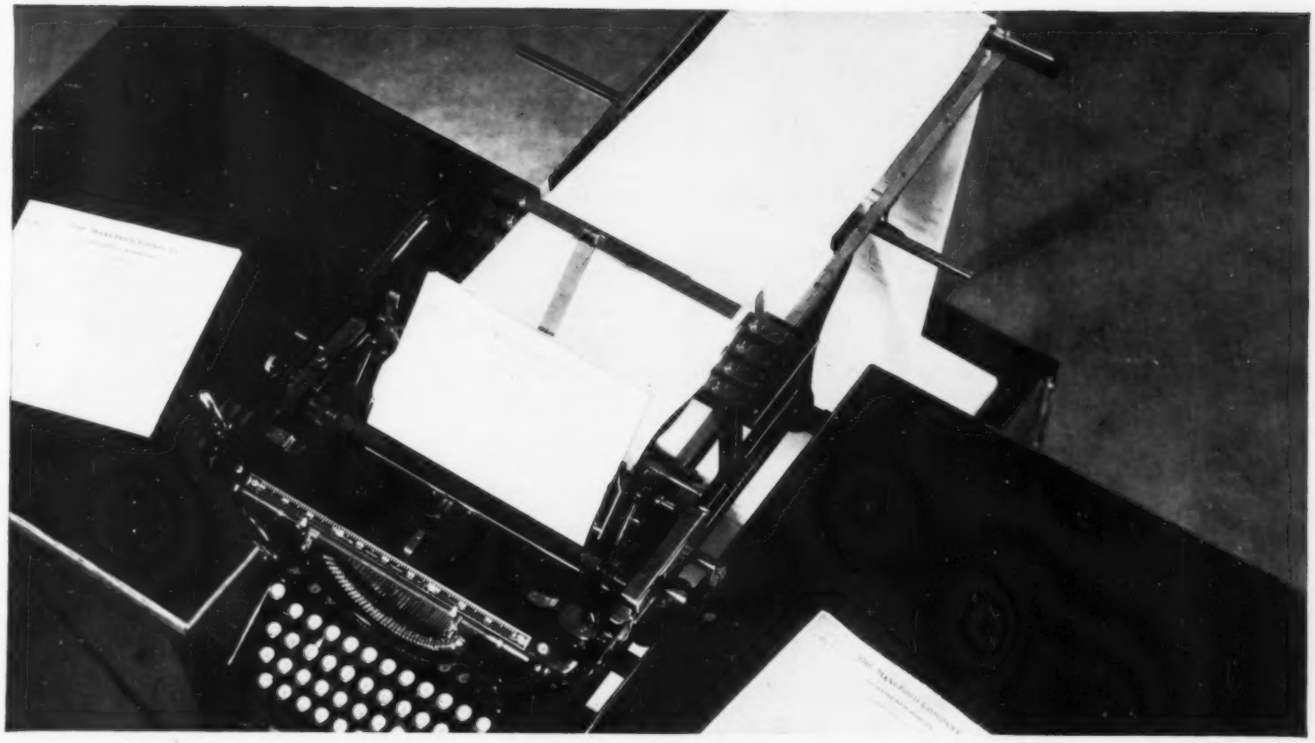
For more facts, one may well read *Cotton*, by W. H. Johnson, complete, up-to-date, world-embrasive. Another source of cotton-lore is *Cotton*, by H. B. Brown, easier to read than Johnson's book, less informative. In *Cotton*, by George Bigwood, one may cruise gently from cotton mythology to textile mills, garner few facts but a comprehensive picture. A handbook of cotton statistics published by the Shepperson Publishing Co. is necessarily dry but indispensable.

Note on Chemical Companies

Of the six largest chemical companies in the world, Solvay & Cie, Belgian family corporation, publishes no financial statements. The five others, ranked according to earnings, stood as follows:

	1929	1928
E. I. du Pont de Nemours* (United States)	$78,171,730	$64,097,798
Union Carbide & Carbon (United States)	35,427,024	30,577,383
Allied Chemical & Dye (United States)	30,198,523	26,962,442
Imperial Chemicals (Great Britain)	28,091,810	25,323,736
I. G. Farbenindustrie (Germany)	24,894,263	28,193,000

* Du Pont's General Motors investment accounted for $42,939,452 of the 1929 profit, leaving $35,232,278 of strictly chemical earnings. All the companies listed above, however, also included profits on investments.



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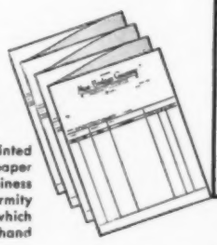

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Note on Cuban Revolution

BE IT in Calcutta after dinner or at Cowes the night after a last race, you must at some time or other offer Havana cigars. They and champagne are luxuries as necessary to an occasion as gavel and robe are to a judge. They are instantly recognizable, like the face of a king; one is familiar with them yet one respects them.

• • •

The two negroes strolling along the street are workers in a cigar factory. They were, of course, sure to be that or workers in a sugar cane field. A cockfight might have detained them as might the ball game which these have eschewed. They are paid by piece, not by day or week, so whether or no they go to the factory they are acting according to choice and it is pleasant. At the factory their deft brown fingers will smooth tobacco leaves, twirl amazingly, somehow fashion Cuban cigars. It is monotonous work and they know it, and to pass the time they choose one of their members, pay him from their own money to read to them. He starts with the newspapers. Then it is magazines or a novel, often Victor Hugo. Thus have their Cuban fathers before them worked and thus they once believed their Cuban sons would work after them. But somebody in the United States invented a machine.

Cuba is too pleasant an island for an industrial revolution. And yet since somebody in the United States did invent a cigar-making machine and since a good half of Cuba's working population is engaged in the making of cigars by hand, a revolution of some kind was inevitable. Cuba's, bloodless like England's, was no less bitter. There were meetings in the unions and shaking of fists and scowls in the factories in the mornings. There were no strikes, because striking would have made no sense. If the worker by hand went on strike he was merely helping the machine. This much anybody could apprehend, though when the first machines entered Cuba nobody knew what they would do, and nobody seemed to care. Only when the first were installed and the cigars rolled out, one after another, one after another, did the people realize. The unions, outraged and complaining, went to their municipal officers and they, anxious to please, placed a prohibitive tax on importation of all cigar-making machinery. This was all very well, but the Cuban Congress had to point out that it was not within the authority of the municipalities to tax the importation of machinery into Cuba from the United States. Having delivered itself of this opinion, the Congress relapsed into silence, the unions lost their first skirmish, and anybody who wanted to could import into Cuba a cigar machine.

When two people battle, it is often a third factor which determines the issue. When the battle is industrial, there is nearly always a third factor, and the third factor is nearly always the public. The Cuban battle inevitably went into the hands of the public and as inevitably became social and epicurean. The Congress *had* decreed that machine-made cigars must so state on the band (a reservation now being fought by machine men). No one in Cuba, therefore, could smoke a machine-made cigar and not know it. The epicures, anyhow, would tell you that machine-made cigars are instantly recognizable, that they are packed too evenly or too tightly and hence lose their moisture . . . It became the mark of the knowing smoker not to smoke anything other than the handmade cigar. This epicurean boycott might have had effect and won the battle for the unions were Cuba the greatest consumer of its own cigars or even the greatest manufacturer of cigars made of Cuban tobaccos. But Cuba is neither of these. And in the United States the machines were fast monopolizing the process of manufacture. In Cuba it became evident that the handmade cigar was destined to no brilliant industrial future, that its niche in the world was among its esoteric luxuries, that the hand-manufacturer ironically must maintain the desirability of his product by the very same quality which insures the fact that it will never make very much money: its rarity.

To a degree, therefore, the Cuban unions won their battle. The prestige of the handmade cigar is still assured. Of Cuba's many cigar factories today only one, the Larranaga, fifth largest, uses machines and it does not use them exclusively. But if George Washington Hill should persuade the world that even that great luxury, the Havana handmade cigar, is better and more sanitary when made by machine—well, on that day, the picturesque Cuban will have lost finally and forever.

NOTE COUPON BELOW

Complete Information about How You Can Use Business Movies to Increase Sales, Cut Travelling Expenses—Sent without Charge for Coupon

6 Buyers *vs.* 1 Salesman

Pictures Show Movie Way Selling Is Easier

Scientific Explanation of the Workings of the Human Brain's 9,000,000,000 Cells Reveals EYE-WAY *as Shortest, Quickest, Surest Way of Selling One or Many Prospects with Equal Ease*

An Amazingly Simplified Selling Method That Enables Your Every Salesman to Get and Hold the Attention of One or Many Buyers. And—to Start Off on the Right Foot When He Begins to Present Your Sales Proposition to Them

Developed from Finding that Pictures-in-Motion Are Far Superior to Words in Building Dominant "Buying Idea" about Product or Service in Prospects' Minds, New-Type Business Movie Speeds Up Selling Remarkably

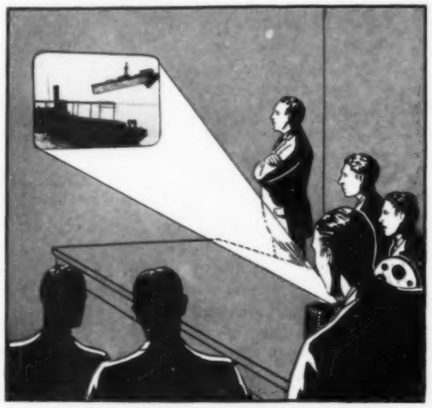
WHETHER his best or worst salesman faces one or six buyers, every salesmanager faces this problem.

Known by every salesmanager—the easiest way to start a sale is to get the buyer believing he knows the product...thinking he knows all the reasons why it is a good "buy".

For, in that frame of mind, a buyer is not afraid of *losing face* in the salesman's eyes *by betraying ignorance of the product.* He's ready to talk buying.

Unknown by every salesmanager—how to get the average salesman to put complete buying information about the product into a buyer's brain without confusion? In a few minutes? Without skipping part of the story? Before starting to sell?

Science offers a simple solution.



New-Type Movies Sell 1 or more with equal ease

What It Is

Science reveals that *hearing* even a simple word like "brush" causes the ear-nerve-brain cell system to bring to mind all the most familiar types of brushes.

On the other hand, *seeing a photograph* of a brush causes the eye-nerve-brain cell system to put into mind the exact image of that particular brush *only.*

Thus, the shortest, quickest, surest of routes to the human brain's 9 billion cells is the *EYE-WAY.* It's the simplest way to sell—with the New-Type Movie.

How The New-Type Movie Simplifies Selling

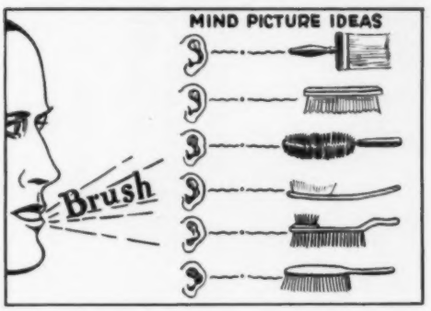
To successfully build in a buyer's mind a complete panorama of buying idea-pictures which shows exactly what your product is and how it will prove advantageous to him, the New-Type Business Movie reveals each picture in its proper idea-relation to the one immediately preceding.

In other words, the technique of the Master Salesman is the technique of the New-Type Movie. It presents instantly understandable ideas in picture form in a way so that when they are flashed on a screen before a buyer they travel one after the other, like freight cars going into a tunnel, through his eyes to his brain.

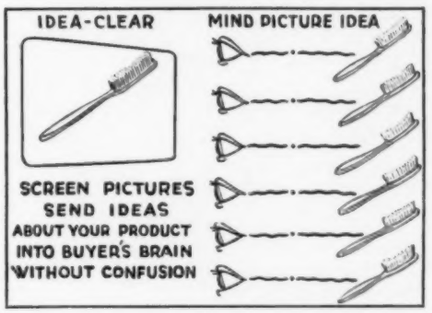
Thus, the one quick way to a buyer's brain...the way that does not confuse...the EYE-WAY...is easily and surely gained by this step-by-step, confidence-building pictures-in-motion method.

New-Type Movie Developed By Pathéscope

Pathéscope offers you a "star" movie that not only presents your product to buyers in the same manner that your star salesman has developed from years of experience, but with the clearness of photography, the forcefulness of logic, the persuasiveness of the action in demonstrations, and the glamour of showmanship.



EAR-WAY *is Confusing*



EYE-WAY *is Clear*

Business Movies Save Time, Money Get Interviews For Salesmen Now

A salesman meets a buyer. The salesman sets out to "sell". The buyer, to keep from being sold. Result—Conflict.

Antagonism removed, selling is easy. Simple to do this way.

Focus the buyer's attention on a "third party"...a movie projector. Let him see a New-Type Movie that gives your selling story up to the point of actually talking terms and prices with perfection never before possible.

Thus, by getting and holding the buyer's favorable attention, your salesman is able to start off on the right foot when he begins to present your sales proposition. First call sales increase—time saved. Travelling expenses drop.

And remember—buyers are glad to see the man with movies. Seeing is believing. They'd rather look than listen.

A Complete Professional Service

Pathéscope is equipped to plan and produce your New-Type Selling Movie from scenario to finished film. Directors, trained in the specialized problems of business movie-making, work closely with clients at every step.

The cost of a film is moderate. We would be pleased to plan a scenario for you and submit an estimate. No obligation, of course.

SEND NOW FOR COMPLETE INFORMATION FREE

THE PATHÉSCOPE CO. OF AMERICA, INC. P-June
35 West 42nd St., New York

Kindly send me complete information about the new-type business movie. No obligation, of course.

Name.....

Company.....

Street.....

City.....*State*.....

THE PATHÉSCOPE CO. OF AMERICA, *Inc.*

Producers and Distributors of Business Movies: Sound, Silent and Still Picture Films

"Nor cast one longing lingering look behind"

IT is love that dictates the writing of a will and the purchase of life insurance. By these means provision is made for the comfort and material well being of those who remain to remember and to live on. And it is love that makes provision for the final resting place of the departed, safe from all external change within the protecting walls of the

GALION
CRYPTORIUM
THE UNDER-GROUND MAUSOLEUM

No vain regrets or futile self-reproach haunt the minds of those who have provided this final tribute of devotion, for this is the ultimate of protection and of beauty, replacing the crude horror of other methods. Neither water nor chemical elements nor living organisms can prevail against the security of Cryptorium walls of Armco Ingot Iron or imperishable bronze. That which is laid away in beauty remains unchanged by any external cause through the revolving years.

Hundreds of thousands of loving hearts bear witness to the solace that rewards Cryptorium emplacement. Leading funeral directors everywhere are prepared to explain this service and to supply it. The cost is altogether moderate.

Write for leaflet 5.

THE GALION METALLIC VAULT CO.
Department FM, Galion, Ohio

GALION
CRYPTORIUM
THE UNDER-GROUND MAUSOLEUM

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THE luxurious Island Estate or the simple Island Camp is becoming increasingly desirable because of its absolute privacy.

We offer, at an exceedingly reasonable price, 400 acres of Butler's Island in Lake Champlain, a delightful property with wonderful scenery, unsurpassed views and excellent fishing. A mile from the mainland and only a few miles to Canada by water. Excellent Terrain for an 18-hole golf course.

This property, due to its natural beauty and adaptability to extensive landscaping, can be made into a paradise either with or without the spending of large sums of money.

If interested in property in northern Vermont near the Canadian border, consult us.

CORLISS REALTY, Inc.
St. Albans, Vermont

Save with Steel

Standardization Simplification Concentration

in All American Steel Desks and Filing Equipment to us as manufacturers means—

1. Lower Costs
2. Easier Financing
3. Economical Purchasing
4. No "Seasonal" Operations
5. Increased Turnover
6. Lower Production Costs

and to you as users means—

1. Better Value for Money
2. Better Quality
3. Prompt Deliveries
4. Lower Maintenance Cost
5. Simplified Purchasing
6. Protection Against Unscrupulous Traders
7. Matchup and Interchangeability of Equipment

In Steel Office Equipment—

STEEL DESKS
STEEL FILING CABINETS
STEEL CUPBOARDS
FILING SUPPLIES

These Three Terms Are As One:

Browne-Morse—
All-American—
Greatest Dollar Value

Write for interesting booklet on Standardization of Manufacturing, Distributing and Using.

BROWNE-MORSE CO., Muskegon, Mich.

JOHN HANCOCK SERIES

Did you read

what John K. Barnes recently said in *World's Work*

about Building a Fortune?

HE said that if one has dependents, the first step is to take out sufficient life insurance for their support. This is the first step towards creating an estate and the only way in which the completion of the estate can be insured against the great uncertainty of life.

With life insurance provided, said Mr. Barnes, a savings bank account for emergencies, and a home bought, a man can then devote his attention to creating an investment estate with his further savings.

This is the sound advice of an experienced business man. Let us inform you about laying the foundations of an estate immediately through life insurance, or protecting an estate already formed, by this means.

Send for our booklet, "THIS MATTER OF SUCCESS."

INQUIRY BUREAU

John Hancock

MUTUAL LIFE INSURANCE COMPANY OF BOSTON, MASSACHUSETTS

Fr.

Over Sixty-Seven Years in Business

This beautiful "Lincraft" Post-and-Rail Fence—11 ft. rails, 65 cents each; posts 95 cents and $1.00 each

Send for "The Book of Fences"

describing Lincraft Rustic Fences, as installed on some of America's most beautiful estates and suburban properties. The Lincraft Line includes Post-and-Rail, English Hurdle and Woven Fences, both hand and machine, sturdily constructed of seasoned, weather-resisting woods. A Lincraft Fence requires no painting, and age only adds to its beauty. It is economical in first cost, installation and up-keep.

LINCRAFT RUSTIC FENCES

NEW JERSEY FENCE COMPANY
34 LOGAN AVE. BURLINGTON, N. J.

A Personal Invitation to Hotel Hollenden

I TAKE pleasure in extending to the readers of "Fortune" a most cordial personal invitation to make The Hotel Hollenden their home when in Cleveland. Located in the heart of Cleveland's business and financial district, The Hollenden, one of the distinguished hotels of the country, offers in grateful combination, homelike comfort, luxurious surroundings, an unexcelled cuisine and an atmosphere of smartness and reasonable and uniform rates.

The famous Crystal Dining Room is a brilliant and delightful place to dine.

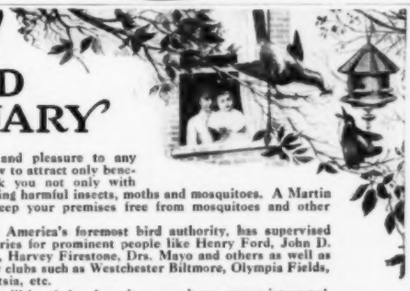
The Hollenden Coffee Shop is modern to the last word, with fast counter and table service for the busy man and woman.

Sincerely yours,

Theo. DeWitt
Vice Pres. & Gen. Mgr.

In Cleveland—its The
HOLLENDEN
THEO. DE WITT,
Vice Pres. and Gen. Mgr.

Ah! A BIRD SANCTUARY



Birds add untold interest and pleasure to any grounds or estate. Learn how to attract only beneficial song birds who thank you not only with cheery songs, but by destroying harmful insects, moths and mosquitoes. A Martin colony, for instance, will keep your premises free from mosquitoes and other flying insect pests.

JOSEPH H. DODSON, America's foremost bird authority, has supervised the building of bird sanctuaries for prominent people like Henry Ford, John D. Rockefeller, Thomas Edison, Harvey Firestone, Drs. Mayo and others as well as country clubs such as Westchester Biltmore, Olympia Fields, Onwentsia, etc.

Joseph H. Dodson

He will be glad to hear from any home owner interested in helping preserve America's song birds and to confer personally regarding the construction of a sanctuary or the proper location of bird houses on your property. Even a small garden can be made a haven for our beautiful birds. Write Mr. Dodson today and learn how to attract birds to your premises this season.

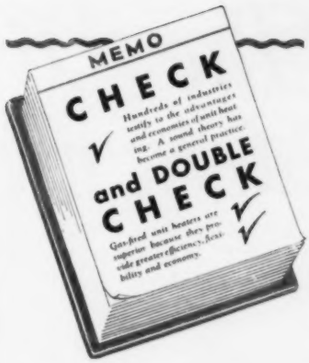
JOSEPH H. DODSON, INC.
"Bird Lodge" 239 Harrison St., Kankakee, Ill.

A Book Will Be Sent to Those Interested—"Your Bird Friends and How to Win Them."

Silver King

THE KING O' THEM ALL

You may be hooking, you may be slicing, your putting may be as erratic as a left-handed earthquake—but if you are playing the Silver King you can be dead certain it isn't the fault of the ball.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Hundreds of industries testify to the advantages and economies of unit heating. A sound theory has become a general practice.
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Gas-fired unit heaters are superior because they provide greater efficiency, flexibility and economy.

Gas is the logical, efficient, flexible fuel for industrial heating. Humphrey Gas Unit Heaters provide instant, controllable heat . . . on when you want it, off when you don't . . . eliminate coal, smoke, dirt, central heating plants, licensed firemen and actually pay for themselves in increased economy and efficiency. Inquiries invited. Write for catalog today!

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New York Pittsburgh Cleveland San Francisco

The Humphrey *Gas* UNIT HEATER

A typical Humphrey Gas Unit Heater installation for a Chicago grocer. Here a single heater provides ample heat for the store without taking up valuable wall or floor space. Every type of building and business can be efficiently heated with Humphrey Gas Unit Heaters.

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NOTICE: THIS CHECK WILL NOT BE HONORED BEFORE ITS DATE
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Dollars
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-Ten and 98/100-
Dividend declared on Policy No. 2059834
Term ending Apr 8
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VAN WERT, OHIO
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Dividend checks are always welcome and doubly so when they mean a substantial reduction in insurance cost. When you buy your insurance, cost is, and should be, secondary to the vital consideration of quality in the protection you secure. But, when you know that the protection offered is absolutely 100% in value, then it becomes only sound business judgment to consider the cost-advantage of a dividend of 30%.

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MANUFACTURERS MUTUAL INSURANCE COMPANY
VAN WERT, OHIO

FIRE, AUTOMOBILE AND TORNADO INSURANCE FOR SELECT RISKS

16 FT. RUNABOUT ◥ 40 H. P. ◥ 25 M. P. H. ◥ SEATS 5 ◥ OAK FRAMES ◥ MAHOGANY PLANKING ◥ DOUBLE-BOTTOM ◥ PRICE F. O. B. WORKS $945

NO expert eye is needed to appreciate the beauty and detect the amazing value of the new Dodge Boats ◥ ◥ ◥ Though your boating lore be nil and your estimate of values based upon the simplest arithmetic, it is easy to see that equal power and speed in other boats cost more ◥ ◥ ◥ So much more that Dodge values have become a veritable sensation ◥ ◥ ◥ For instance, the sixteen foot, 5 passenger runabout, ribbed with oak, planked with genuine mahogany, driven at 25 miles an hour by its 40 horse power motor ◥ ◥ ◥ Those who know boat values naturally expect to find its price up in the thousands ◥ ◥ ◥ Actually it costs but $945, little more than the bare outboard hulls and motors which many are discarding in its favor ◥ ◥ ◥ Values throughout the new Dodge fleet are without precedent ◥ ◥ ◥ from the 16-footer, through the 21-footer, 25-foot and 28-foot runabouts, up to Victoria Sedans at $5300. Write for the complete Dodge catalog ◥ ◥ ◥ It illustrates and describes all Dodge models ◥ ◥ ◥ It will be sent on request.

DODGE BOATS

HORACE E. DODGE BOAT & PLANE CORPORATION. WORKS: NEWPORT NEWS, VA. GENERAL SALES DEPARTMENT: 21 W. 46TH ST., N. Y. C.

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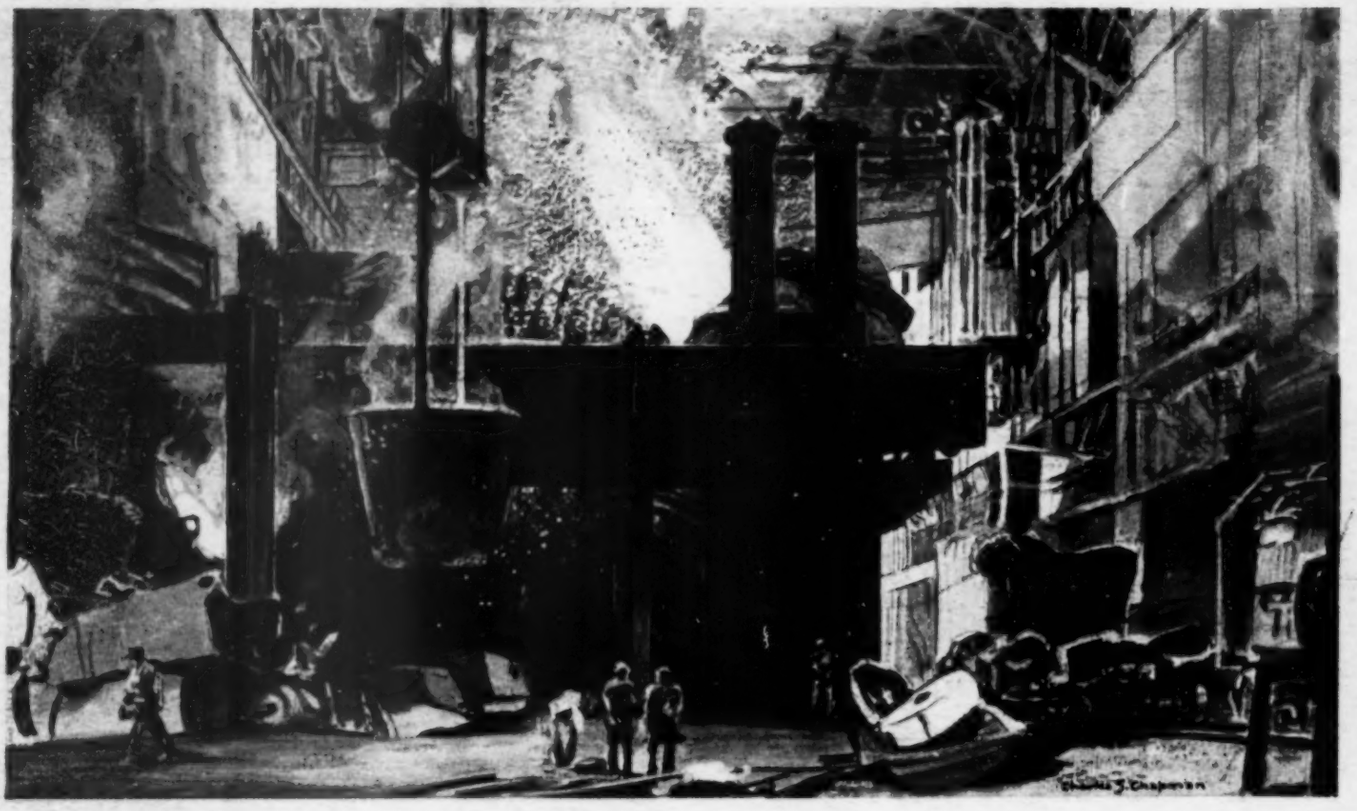

Steel's giant hands lubricated by Texaco

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Anticipating every development, insuring ever higher standards of quality . . . Texaco Laboratories are the source of Texaco progress.

Nowhere are lubrication requirements so exacting as in the nation's great steel mills. Here giant machines flexible as human hands work day and night, shuttling tremendous burdens from areas of intense heat to freezing cold.

Destructive abrasives, extreme temperatures, corrosive fumes and terrific friction —against all these hazards steel mills depend upon Texaco for protection. After testing and comparing they have found that specialized Texaco Lubricants best meet their specialized needs.

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TEXACO

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